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GOVERNMENT REPORTS

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& INDEX

July 6, 1979
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ANNOUNCEMENTS & INDEX

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U.S. DEPARTMENT OF COMMERCE
Juanita M. Kreps, Secretary
NATIONAL TECHNICAL INFORMATION SERVICE
Melvin S. Day, Director

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GOVERNMENT REPORTS ANNOUNCEMENTS & INDEX

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FIELD 14. METHODS AND EQUIPMENT. Includes the following Groups: Cost Effectiveness; Laboratories, Test Facilities, and Test Equipment; Recording Devices; Reliability; Reprography.

FIELD 15. MILITARY SCIENCES. Includes the following Groups: Antisubmarine Warfare; Chemical, Biological, and Radiological Warfare; Defense; Intelligence; Logistics; Nuclear Warfare; Operations, Strategy, and Tactics.

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FIELD 18. NUCLEAR SCIENCE AND TECHNOLOGY. Includes the following Groups: Fusion Devices (Thermonuclear); Isotopes; Nuclear Explosions; Nuclear Instrumentation; Nuclear Power Plants; Radiation Shielding and Protection; Radioactive Wastes and Fission Products; Radioactivity; Reactor Engineering and Operation; Reactor Materials; Reactor Physics; Reactors (Power); Reactors (Non-power); SNAP Technology.

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*These categories were endorsed by the Committee on Scientific & Technical Information (COSATI) of the Federal Council for Science & Technology in 1964. A booklet describing these categories is available from NTIS; the order number is AD-612 200.

A price schedule, current on date of publication, is affixed to the outside back cover.

SAMPLE ENTRIES

MAIN ENTRY

Report entries are arranged by subject group and field. Within fields they are arranged alphanumerically by NTIS order number (accession number); alphabetic data precedes numeric.

Field 10 ENERGY CONVERSION (NON-PROPULSIVE)

Group 10A Conversion Techniques

Order number — **PB-254 315/5GA** — PC **A16/MF A01** — **Price codes**

Corporate author — Smithsonian Science Information Exchange, Inc., Washington, D.C.

Personal author — **Information on International Research and Development Activities in the Field of Energy,** David F. Hersey. May 76, 370p* NSF/RA-760057, Grant NSF-AER74-20678 — **Report title**

Keywords — descriptors & identifiers — Descriptors: *Directories, *Indexes (Documentation), *Energy, Research projects, Foreign countries, Bibliographies, Abstracts. Identifiers: Announcement bulletins.

Abstract of report — This directory is the product of a data collection effort undertaken by the Smithsonian Science Information Exchange (SSIE) on behalf of an interagency committee formed under the U.S. State Department to provide international cooperation in energy research and development. Included is information covering 1766 ongoing and recently completed energy research projects conducted in Canada, Italy, the Federal Republic of Germany, France, the Netherlands, the United Kingdom, and 25 other countries. In addition to the title and text of project summaries, the directory contains the following indexes: Subject Index, Investigator Index, Performing Organization Index, and Supporting Organization Index.

INDEX ENTRIES

Index entries are arranged alphanumerically. Titles are included in all indexes except the Contract Number index.

SUBJECT

ENERGY
Information on International Research and Development Activities in the Field of Energy.
PB-254 315/5GI 10A

Entries are sequenced by major subject term (the keywords with an asterisk) and by NTIS order number.

PERSONAL AUTHOR

HERSEY, DAVID F.
Information in International Research and Development Activities in the Field of Energy.
PB-254 315/5GI 10A

Entries are sequenced by personal author, report title, and NTIS order number.

CORPORATE AUTHOR

SMITHSONIAN SCIENCE INFORMATION EXCHANGE, INC., WASHINGTON, D.C.
Information on International Research and Development Activities in the Field of Energy.
(NSF/RA-760057)
PB-254 315/5GI 10A

Entries are sequenced by corporate author name, original report number, and NTIS order number. The monitor agency number is given following the report title.

CONTRACT GRANT NUMBER

NSF-AER74-20678
Smithsonian Science Information Exchange, Inc., Washington, D.C.
PB-254 315/5GI 10A

Entries are sequenced by contract or grant number, corporate author, and NTIS order number.

ACCESSION/REPORT NUMBER

PB-254 315/5GI
Information on International Research and Development Activities in the Field of Energy.
PB-254 315/5GI 10A PC **A16/MF A01**

Entries are sequenced by NTIS order, original report, or monitor agency number. Price codes are given in this index.

REPORTS ANNOUNCEMENTS

1. AERONAUTICS

1A. Aerodynamics

AD-A065 181/0GA PC **A05**/MF **A01**
Lockheed-Georgia Co., Marietta.
Development of a Viscous Vortex/Wing Interaction Program for Thick Wings with Rounded Leading Edge.
Final rept.,
Charles J. Dixon, and S. Sampath. 30 Nov 78, 93p LG78ER0227, ONR-CR215-233-4F
Contract N00014-74-C-0151

Descriptors: Flow fields, *Thick wings, *Leading edges, *Vortices, Potential flow, Viscous flow, Computer programs, Delta wings, Lift, Curved profiles, Navier Stokes equations, Boundary layer, Three dimensional, Flow separation, Angle of attack, Yawed wings, Wing body configurations, Iterations, Hybrid simulation.
Identifiers: Rounded leading edges, High angle of attack.

A hybrid viscous/potential flow program was developed to analyze the flow field on and around a swept thick wing with rounded leading edges and leading edge vortex flow. The program provides a computational package which includes four major programs run with proper interfacing in an iterative cycle. These programs include two viscous programs and two potential flow programs. The viscous flow programs consist of: (1) a parabolic solution to the Navier-Stokes vorticity equation in a box around the leading edge vortex; and (2) a three-dimensional second-order boundary layer program for infinite yawed wings. This program provides the boundary layer vorticity being fed into the vortex box. The two potential flow programs are: (1) the Hess surface singularity method for thick wings and fuselage combination; and (2) a vortex lattice method to model the leading edge vortex. These two programs provide the surface pressures and the viscous box boundary velocities. The program interfaces are developed by applying the concept to a 65 deg delta wing with a spanwise variation in leading edge radius. Operating experience is presented, giving the results and knowledge gained in each cycle of the iterations. The method allows the designer to design or modify the leading edge shape to meet the desired performance and control requirements.

N79-18901/5GA PC **A10**/MF **A01**
Bell Aerospace Textron, Buffalo, NY.
General Purpose Computer Program for Interacting Supersonic Configurations: Programmer's Manual.
W. Crill, and B. Dale. 1977, 218p NASA-CR-145127
Contract NAS1-13987

Descriptors: *Aircraft configurations, Computer programs, *Supersonic flow, Aerodynamic forces, Fortran, Numerical analysis, Subroutines, Unsteady flow.
Identifiers: ISCON computer program.

For abstract, see STAR 1710

N79-18914/8GA PC **A03**/MF **A01**
National Aeronautics and Space Administration, Washington, DC.
Vortex Pattern Development on the Upper Surface of a Swept Wing at High Angle of Attack.
J. Mirande, V. Schmitt, and H. Werle. Mar 79, 35p NASA-TM-75377, ONERA-TP-1978-124
Contract NASW-3199
Tran-Transl. Into English of Conf. Paper from Onera, Paris. Misc-Original Language Document Was Announced as A79-18554. Subm-Transl. By Kanner (Leo) Associates, Redwood City, Calif. Conf-Presented at AGARD. Reunion sur l'Aerodynamique des Grandes Incidences, Sandefjord, Norway, 4-6 Oct. 1978.

Descriptors: Angle of attack, Surface geometry, *Swept wings, *Vortices, Flow distribution, Physical properties, Pressure effects, Trailing edges, Wind tunnel tests.

For abstract, see STAR 1710

N79-18915/5GA PC **A03**/MF **A01**
National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
Approximation Concepts for Numerical Airfoil Optimization.
G. N. Vanderplaats. Mar 79, 38p NASA-TP-1370, A-7682

Descriptors: *Airfoil profiles, Numerical analysis, Optimal control, Aerodynamics, Algorithms, Approximation, Automatic control, Data processing, Data reduction, Design analysis.

For abstract, see STAR 1710

N79-18916/3GA PC **A03**/MF **A01**
National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
Inertial Dynamics of a General Purpose Rotor.
R. W. Duval. Mar 79, 34p NASA-TM-78557, A-7731

Descriptors: *Equations of motion, *Rotary wings, *Rotor systems research aircraft, Data processing, Flapping, Mathematical models, Rotary stability.

For abstract, see STAR 1710

N79-18917/1GA PC **A07**/MF **A01**
Kansas Univ. Center for Research, Inc., Lawrence. Flight Research Lab.
Analysis of Some Aerodynamic Characteristics Due to Wing-Jet Interaction.
G. L. Filliman, and C. E. Lan. Mar 79, 126p NASA-CR-158349, CRINC-FRL-281-4
Grant NSG-1139

Descriptors: *Aerodynamic characteristics, *Drag reduction, *Flow distribution, *Jet flaps, *Upper surface blown flaps, Computer programming, Graphs (Charts), Jet lift, Mathematical models, Sweptback wings.

For abstract, see STAR 1710

N79-18948/6GA PC **A19**/MF **A01**
Von Karman Inst. for Fluid Dynamics, Rhode-Saint-Genese (Belgium).
Computational Fluid Dynamics, Volume 2.
1976, 432p VKI-LECTURE-Ser-87-V-2
Seri-2. Conf-Lecture Held at Rhode Saint Genese, Belgium, 15-19 Mar. 1976.

Descriptors: *Aerodynamic configurations, Conferences, *Fluid dynamics, *Numerical analysis, *Problem solving, *Transonic flow, Finite element method, Navier-stokes equation, Relaxation method(Mathematics), Three dimensional flow, Transonic flow, Two dimensional flow.
Identifiers: Belgium, *Meetings.

For abstract, see STAR 1710

N79-18960/1GA PC **A03**/MF **A01**
National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
Evaluation of a Wake Vortex Upset Model Based on Simultaneous Measurements of Wake Velocities and Probe-Aircraft Accelerations.
B. J. Short, and R. A. Jacobsen. Mar 79, 42p NASA-TM-78561, A-7735

Descriptors: Acceleration(Physics), Accelerometers, *Aircraft wakes, *Velocity measurement, *Vortices, Aerodynamic characteristics, Angular acceleration, Flow distribution, Mathematical models.
Identifiers: *Trailing vortices, Boeing 747 aircraft.

For abstract, see STAR 1710

1B. Aeronautics

AD-A065 071/3GA PC **A07**/MF **A01**
Facility Checking Squadron (1866th) (AFCS), Scott AFB, IL.
TRACALS Evaluation Report. SSILS Station Evaluation Report. RAF Mildenhall, United Kingdom, 17 October - 10 November 1978.
Final rept.,
Paul W. Nix. 9 Jan 79, 129p Rept no. 78/66N-143

Descriptors: *Instrument landings, *Air traffic control systems, Great Britain, Air Force facilities, Alignment, Aircraft landings, Clearances, Glide slope, Radio telemetry, Theodolites, Approach, Solid state electronics, Beacons, Reliability(Electronics), Atmospheric refraction.
Identifiers: AN/GRN-27(V), SSILS(Solid State Instrument Landing System), TRACALS(Traffic Control Approach and Landing System), RTT(Radio Telemetric Theodolites).

This report presents the results of the 17 October - 10 November 1978 TRACALS station evaluation of the RAF Mildenhall, UK AN/GRN-27 (V) Solid State Instrument Landing System (SSILS). The ground and airborne data presented herein can be used as a valid guide to anticipated performance of the SSILS until there is a significant change in ground equipment or in horizon screening.

AD-A065 266/9GA PC **A03**/MF **A01**
Fairchild Imaging Systems, Sycsset, NY.
Wire Obstacle Warning System.
Semiannual technical rept. 15 Jun-15 Dec 77,
J. Hunt, and R. Kleehammer. Jan 79, 49p ED-AX-120, USAAVRADCOM-TR-77-2167-1
Contract DAAB07-77-C-2167

Descriptors: *Aviation safety, *Warning systems, *Helicopters, Charge coupled devices, Wire, Electrooptics, Images, Detection, Low altitude, Gallium arsenide lasers, Flight testing, Avoidance.
Identifiers: *WOWS(Wire Obstacle Warning System).

The requirements for a Wire Obstacle Warning System (WOWS) have been studied to establish the design trade offs which are compatible with the WOWS development specification DS-EH-0232A(V). The results presented in this report form the basis for the detailed WOWS design. This report covers the System Requirements, Stabilization Requirements, and Electro-Optical Design considerations for a Flyable Exploratory Development Model of a Charge Coupled Device (CCD) Sensor System operating as an Automatic Pattern Recognition System. (Author)

AD-A065 270/1GA PC **A07**/MF **A01**
Bell Helicopter Textron, Fort Worth, TX.
Operational Loads Survey - Data Management System. Volume II. Systems Manual.
Final rept.,
Richard B. Philbrick, and Alfred L. Eubanks. Jan 79, 128p BHT-299-099-871-VOL-2, USARTL-TR-78-52B
Contract DAAJ02-77-C-0053
See also Volume 1, AD-A065 129.

Descriptors: *Helicopter rotors, *Attack helicopters, *Aerodynamic loading, Computer applications, Programming manuals, Data reduction, Data bases, Data management, Computations, Plotters, Computer graphics, Interactive graphics, Mathematical analysis, Batch processing, Rotor blades(Rotary wings), Spectrum analysis, Harmonic analysis, Digital filters.
Identifiers: CALCOMP plotters, AH-1G helicopters, H-1 helicopters.

The Operational Loads Survey/Data Management System (OLS/DMS) was designed and programmed as a computer software tool for data management and processing of the Operational Loads Survey (OLS) test data base. With limited modification, the OLS/DMS will accommodate other large, time based, test data bases. The system transfers selected test data to a large, direct access disc file and maintains the data on a semi-permanent basis. Data are retrieved from this file, processed, and displayed interactively or in batch. Plot output is generated on a Tektronix 4014 or an incremental plotter (e.g., Calcomp). A small sample of available processing options includes amplitude spectrum, harmonic analysis, digital filtering, blade static pressure coefficient, and blade normal force coefficient. This program will accommodate data from multiple sensors simultaneously for processing of functions with two geometric independent variables (e.g., chord and radius). This report is a systems manual for assistance in program maintenance, modification, and/or installation.

AD-A065 368/3GA PC **A14**/MF **A01**
National Aviation Facilities Experimental Center, Atlantic City, NJ.
Collision Avoidance: An Annotated Bibliography May 1972 - November 1977.
Final rept. May 72-Nov 77,
Dorothy E. Bulford. Dec 77, 320p Rept no. FAA-NA-78-8
See also Rept. nos. FAA-NA-72-41, AD-746 863 and FAA-NA-68-54, AD-677 942.

Descriptors: *Collision avoidance, *Bibliographies, Air traffic, Discrete address beacon systems, Aviation safety, Aviation accidents, Jet transport planes, Supersonic transports, Indexes.
Identifiers: Midair collisions, Near misses.

Collision Avoidance was the subject of a bibliography published in 1968 as FAA report number NA-68-54 (AD 677 942). That report, which contained 1013 citations without annotations, was supplemented in 1972 with the publication of FAA report number NA-72-41 (AD 746 863) which contained 828 annotated references. This collection of 859 references to literature issued since April 1972 further supplements the information found in the two earlier reports. (Author)

PB-293 236/6GA PC **A05**/MF **A01**
National Transportation Safety Board, Washington, DC. Bureau of Technology.
Briefs of Accidents Involving Turbine Powered Aircraft, U.S. General Aviation, 1977.
Accident rept. 1977.
19 Dec 78, 100p NTSB-AMM-78-14
See also report dated 13 Apr 78, PB-283 002.

Descriptors: *Aviation accidents, *Turbojet engines, Aircraft collisions, Casualties, Damage, Accident investigations, Statistical data, Pilots, Licenses, Aircraft landing, Passenger aircraft, Cargo aircraft, Jet aircraft, Transport aircraft.
Identifiers: Accident causes, General aviation accidents.

The publication contains reports of U.S. general aviation turbine powered aircraft accidents occurring in 1977. Included are 129 accident Briefs, 37 of which involve fatal accidents. The brief format presents the facts, conditions, circumstances, and probable cause(s) for each accident. Additional statistical information is tabulated by type of accident, phase of operation, injury index, aircraft damage, pilot certificate, injuries and cause/factor(s).

PB-293 260/6GA PC **A14**/MF **A01**
National Transportation Safety Board, Washington, DC. Bureau of Technology.
Briefs of Accidents Involving Aerial Application Operations, U.S. General Aviation, 1977.
19 Dec 78, 319p NTSB-AMM-78-21
See also report dated 1976, PB-283 009.

Descriptors: *Aviation accidents, Air drop operations, Pesticides, Fire fighting, Pest control, Spraying, Fertilizing, Aerial surveys, Agriculture, Forestry, Casualties, Damage, Accident investigations, Statistical data, Aeronautics.
Identifiers: Accident causes, General aviation accidents.

The publication contains reports of U. S. general aviation aerial application accidents occurring in 1977. Included are 454 accident Briefs, 30 of which involve fatal accidents. The brief format presents the facts, conditions, circumstances, and probable cause(s) for each accident. Additional statistical information is tabulated by type of accident, phase of operation, injury index, aircraft damage, pilot certificate, injuries, kind of operation, and causes/factors.

PB-293 261/4GA PC **A12**/MF **A01**
National Transportation Safety Board, Washington, DC. Bureau of Technology.
Briefs of Fatal Accidents Involving Weather as a Cause/Factor. U.S. General Aviation, 1977.
19 Dec 78, 260p NTSB-AMM-78-16
See also report dated 1976, PB-283 004.

Descriptors: *Aviation accidents, *Civil aviation, *Weather, Aircraft collisions, Casualties, Damage, Accident investigations, Statistical data, Pilots, Licenses.
Identifiers: Accident causes, General aviation accidents.

The publication contains reports of all fatal U. S. general aviation accidents involving weather as a cause/factor for the year 1977. Included are 258 fatal accidents in the brief format. This format presents the facts, conditions, circumstances, and probable cause(s) for each accident. Additional statistical information is tabulated on all accidents involving weather as a cause/factor by type of accident, phase of operation, injury index, aircraft damage, pilots certificate, injuries and cause/factor(s).

PB-293 295/2GA PC **A08**/MF **A01**
National Transportation Safety Board, Washington, DC. Bureau of Technology.
Briefs of Accidents Involving Commuter Air Carriers and On-Demand Air Taxi Operations, U. S. General Aviation, 1977.
19 Dec 78, 154p NTSB-AMM-78-22

Descriptors: *Aviation accidents, Aircraft collisions, Casualties, Damage, Accident investigations, Statistical data, Pilots, Licenses.
Identifiers: Accident causes, General aviation accidents, Air taxi operations, Commuter air carrier operations.

The publication contains reports of commuter air carrier and on-demand air taxi accidents that occurred in 1977. Included are 37 commuter air carrier and 180 on-demand air taxi accident briefs. The brief format presents the facts, conditions, circumstances and probable cause(s) for each accident. Additional statistical information is tabulated by type of operation, injuries, aircraft weight, and cause(s) and related factor(s).

PB-293 299/4GA PC **A04**/MF **A01**
National Transportation Safety Board, Washington, DC. Bureau of Technology.
Briefs of Accidents Involving Corporate/Executive Aircraft, U.S. General Aviation, 1977.
19 Dec 78, 59p NTSB-AMM-78-19

Descriptors: *Aviation accidents, Aircraft collisions, Casualties, Damage, Accident investigations, Statistical data, Pilots, Licenses.
Identifiers: Accident causes, General aviation accidents, Corporate/executive aircraft.

The publication contains reports of U.S. general aviation corporate/executive aircraft accidents occurring in 1977. Included are 60 accident Briefs, 18 of which involve fatal accidents. The brief format presents the facts, conditions, circumstances and probable cause(s) for each accident. Additional statistical information is tabulated by type of accident, phase of operation, injuries and causal/factor(s).

PB-293 300/0GA PC **A04**/MF **A01**
National Transportation Safety Board, Washington, DC. Bureau of Technology.
Briefs of Accidents Involving Amateur/Home Built Aircraft, U.S. General Aviation, 1977.
19 Dec 78, 71p NTSB-AMM-78-20

Descriptors: *Aviation accidents, Aircraft collisions, Casualties, Damage, Accident investigations, Statistical data, Pilots, Licenses.
Identifiers: Accident causes, General aviation accidents, Amateur aircraft.

The publication contains reports of U.S. general aviation accidents involving amateur/home built aircraft occurring in 1977. Included are 106 accident Briefs, 21 of which involve fatal accidents. The brief format presents the facts, conditions, circumstances and probable cause(s)/factor(s) for each accident. Additional statistical information is tabulated by type of accident, phase of operation, injury index, aircraft damage, pilot certificate, injuries and causal/factor(s).

PB-293 304/2GA PC **A04**/MF **A01**
National Transportation Safety Board, Washington, DC. Bureau of Technology.
Briefs of Accidents Involving Missing and Missing Later Recovered Aircraft, U.S. General Aviation, 1977.
19 Dec 78, 66p NTSB-AMM-78-18

Descriptors: *Aviation accidents, Aircraft collisions, Casualties, Damage, Accident investigations, Statistical data, Pilots, Licenses.
Identifiers: Accident causes, General aviation accidents.

The publication contains reports of U.S. general aviation missing and missing later recovered accidents occurring in 1977. Included are 63 accident Briefs, 11 of which cover missing aircraft not recovered and 52 missing later recovered. The brief format presents the facts, conditions, circumstances, and probable cause(s) for each accident. Additional statistical information is tabulated by type of accident, phase of operation, injury index, aircraft damage, pilot certificate, injuries and causal factor(s).

PB-293 362/0GA PC **A09**/MF **A01**
National Transportation Safety Board, Washington, DC. Bureau of Technology.
Briefs of Accidents Involving Rotorcraft, U.S. General Aviation, 1977.
19 Dec 78, 179p NTSB-AMM-78-15

Descriptors: *Aviation accidents, *Rotary wing aircraft, Aircraft collisions, Casualties, Damage, Accident investigations, Statistical data, Pilots, Licenses.
Identifiers: Accident causes, General aviation accidents.

The publication contains reports of U.S. general aviation rotorcraft accidents occurring in 1977. Included are 276 accident Briefs, 29 of which involve fatal accidents. The brief format presents the facts, conditions, circumstances, and probable cause(s) for each accident. Additional statistical information is tabulated by type of accident, phase of operation, injury index, aircraft damage, kind of flying, pilot certificates, injuries, and causes and related factors.

PB-293 547/6GA PC **A09**/MF **A01**
National Transportation Safety Board, Washington, DC. Bureau of Technology.
Listing of Aircraft Accidents/Incidents by Make and Model; U.S. Civil Aviation 1977.
19 Dec 78, 199p NTSB-AMM-78-12
See also report dated 15 Dec 75, PB-250 039.

Descriptors: *Aviation accidents, Aircraft collisions, Casualties, Damage, Accident investigations, Statistical data, Pilots, Licenses, Civil aviation.
Identifiers: Accident causes.

The publication contains a listing of all U.S. civil aviation accidents/incidents occurring in calendar year 1977, sorted by aircraft make and model. Included are the file number, aircraft registration number, data and location of the accident, aircraft make and model and injury index for all 4,427 accidents/incidents occurring in this period.

1C. Aircraft

AD-A064 850/1GA PC **A06**/MF **A01**
Sonobond Corp., West Chester, PA.
Ultrasonic Welding of Helicopter Secondary Structure Components.
Final rept. 1 Jul 76-30 Jun 77,
Janet Devine, and Gordon K. Dingle. Oct 77,
105p RR-77-9, USAAVRADCOM-77-8
Contract DAAJ01-76-C-0913
Prepared in cooperation with Hughes Helicopters, Culver City, CA.

Descriptors: *Helicopters, *Structural members, *Ultrasonic welding, Aluminum alloys, Shear stresses, Tensile strength, Spot welds, Airfoils, Doors, Military aircraft, Test methods.
Identifiers: Aluminum alloy 2043-T1, Aluminum alloy 2024, Aluminum alloy 6061-T6, AAH helicopters.

Ultraonic welding was evaluated as a means for assembling helicopter secondary structures. Such welds in several combinations of 2024- and 6061 aluminum alloys demonstrated tensile-shear strengths of more than 2.5 times the strength of resistance spot welds. Inner and outer skins of helicopter doors (0.020-inch 2024-T3 Alclad to 0.025-inch 6061-T6 Alclad aluminum alloys) as-

sembled by this process successfully withstood air loads of five to ten times the design loading for the door. A process specification for use of ultrasonic welding in nostructural and secondary structure components for AAH aircraft was prepared for use at Hughes Helicopters. It was recommended that the process be validated for other materials and material combinations and that ultrasonic welding and ultrasonic weld bonding be evaluated for aircraft primary structures.

AD-A064 979/8GA PC **A07**/MF **A01**
Lockheed-California Co., Burbank.
Improvement of Overload Capability of Air Carrier Aircraft Tires.
Final rept. Oct 77-Sep 78,
Paul C. Durup. Oct 78, 126p FAA-RD-78-133
Contract DOT-FA77WA-4069

Descriptors: *Aircraft tires, *Safety, *Overload, Statistical analysis, *Transport aircraft, Loads(Forces), Deflection, Temperature, Maintainability, Failure(Mechanics), Test methods, Ground support equipment.

Statistical and analytical data are used to develop Transport Aircraft Ground Operations scenarios describing tire loads, deflections, temperatures, and distance traveled. These scenarios are used to aid in defining the critical conditions causing tire overload. Reasons for failure of overloaded tires are developed and used to identify potential improvements for overload capability for tires currently in use. Cost tradeoff studies are made to indicate which of the improvements appear promising for further development. Concepts for new designs capable of overload are discussed along with 'runflat-ideas.' Using information developed in the program, tire maintenance practices that may improve the overload performance of current tires are presented.

AD-A065 008/5GA PC **A05**/MF **A01**
Teledyne Ryan Aeronautical, San Diego, CA.
RPV Electric Power System Study. Phase II. Hot Bench Mockup Development.
Final technical rept. 1 May-31 Aug 78,
Frederic L. Miller, and Lou Pico. Nov 78, 99p
TRA29318-08, AFAPL-TR-78-93
Contract F33615-76-C-2069

Descriptors: *Aircraft equipment, *Electric power distribution, *Remotely piloted vehicles, Tactical aircraft, High altitude, Weight reduction, Systems engineering, Modular construction, Cost effectiveness, Endurance(General), Reliability, Maintainability.
Identifiers: Expendable aircraft, TEDS(Tactical Expendable Drone System).

The RPV Electric Power Study explores ways for exploiting technology and resolving critical issues affecting the electrical subsystems of remotely piloted vehicles. The objective is to define electrical components and system concepts that offer significant cost, weight and performance improvements over present day systems. Phase I is an assessment of technologies capable of benefitting RPV electrical systems. Phase II develops a plan to transfer viable technologies into RPV systems. The Phase II approach is to first develop a complete picture of the needs, requirements and constraints on a laboratory hot bench mockup. After considering concept alternatives and related design factors, a modular concept is selected that is adaptable to all classes of RPV. Preliminary designs of a mockup for each of the four classes of RPV are described, that is; Advanced multi-mission RPV, High-altitude long endurance RPV, Mini RPV, and Tactical expendable drone system (TEDS). A mockup development plan is presented for each RPV class including a schedule, budgetary estimate of labor and material costs, list of components and a list of manufacturers capable of developing those items requiring development. Also included is a guide for developing test programs for RPV electrical systems. (Author)

AD-A065 010/1GA PC **A11**/MF **A01**
Boeing Vertol Co., Philadelphia, PA.
OH-58 Composite Main Rotor Blade Preliminary Design Investigation.
Final rept.,
J. S. Hoffrichter. Nov 78, 246p USARTL-TR-78-27
Contract DAAJ02-77-C-0074

Descriptors: *Helicopter rotors, *Rotor blades(Rotary Wings), Composite structures, Experimental design, Trade off analyses, Life cycle costs, Performance(Engineering), reliability, Maintainability, Radar reflections, Survival(General), Ballistics.
Identifiers: OH-58 helicopters, H-58 helicopters.

This report presents the results of a design study to replace the existing OH-58 C/A Main Rotor Blade with a Composite Rotor Blade. The effort consisted of a trade study phase and a preliminary design phase. The composite construction rotor blade defined in this report in whole or in part meets the defined improvement objectives in the areas of life cycle cost, performance, reliability and maintainability, radar reflectivity, and ballistic survivability.

AD-A065 049/9GA PC **A99**/MF **A01**
Air Force Flight Dynamics Lab., Wright-Patterson AFB, OH.
Conference on Aerospace Transparent Materials and Enclosures (12th), Held at Long Beach, California, on April 24-26, 1978.
Conference rept.,
Robert E. Wittman. Dec 78, 903p Rept no. AFFDL-TR-78-168

Descriptors: *Airframes, *Canopies, *Transparencies, *Aircraft canopies, Aerospace craft, Windshields, Polycarbonates, Acrylic resins, Optical coatings, Bird strikes, Impact strength, Environmental tests, Conferencing(Communications), Reports.

The purpose of this report is to make available the technical papers presented at the Twelfth Conference on 'Aerospace Transparent Materials and Enclosures.' Thirty-eight technical papers are presented in seven sessions that address transparency design and performance, characterization, materials and processes, and bird impact resistance. The papers contained herein have been reproduced directly from the original manuscripts. (Author)

AD-A065 106/7GA PC **A02**/MF **A01**
Illinois Inst. of Tech., Chicago. Dept. of Mechanics Mechanical and Aerospace Engineering.
Studies of the Dynamic Stall or Airfoil Profiles for Helicopter Rotors.
Final rept. 1 Jun 75-30 Sep 78,
Andrew A. Fejer. 20 Jan 79, 15p ARO-12742.2-E
Grant DAHC04-75-G-0142

Descriptors: *Helicopter rotors, *Blade airfoils, *Stalling, Rotor blades(Rotary wings), Lifting surfaces, Nonuniform flow, Angle of attack, Oscillation, Wind tunnel tests, Two dimensional flow.

The interaction of oscillations of the mean velocity of the relative flow with the periodic changes in angle of attack that are produced in the forward flight of helicopters on the airfoil profiles of the rotors has been investigated for the first time. The study conducted in the IIT 2 ft x 2 ft oscillating flow wind tunnel coupled with visual observations in a small water tunnel has revealed that the aerodynamic characteristics of oscillating flows in steady flow, documented by a number of investigators, may be altered significantly when oscillations of the flow velocity are superimposed on those of the angle of attack of the airfoil. (Author)

AD-A065 129/9GA PC **A08**/MF **A01**
Bell Helicopter Textron, Fort Worth, TX.
Operational Loads Survey - Data Management System. Volume I. User's Manual.
Technical rept.,
Richard B. Philbrick, and Alfred L. Eubanks. Jan 79, 166p BHT-299-099-871, USARTL-TR-78-52A
Contract DAAJ02-77-C-0053

Descriptors: *Helicopters, *Flight loads, Computer programs, Data bases, Data reduction, Data management, Interactive graphics, Manuals, User needs, Signal processing, Mathematical analysis, Test methods, Plotters.
Identifiers: AH-1G helicopters, H-1 helicopters.

The Operational Loads Survey/Data Management System (OLS/DMS) was designed and programmed as a computer software tool for data management and processing of the Operational Loads Survey (OLS) test data base. With limited modification, the OLS/DMS will accommodate other large, time based, test data bases. The system transfers selected test data to a large, direct access disc file and maintains the data on a semi-permanent basis. Data are retrieved from this file, processed, and displayed interactively or in batch. Plot output is generated on a Tektronix 4014 or an incremental plotter (e.g., Calcomp).

AD-A065 153/9GA PC **A04**/MF **A01**
Purdue Univ., Lafayette, IN. School of Mechanical Engineering.
Ignition of Fuel Sprays by Hot Surfaces and Stabilization of Aircraft Fires.
Interim rept. 1 Oct 77-15 Nov 78,
J. G. Skifstad, A. H. Lefebvre, D. R. Ballal, K. R. Saksteder, and M. S. Kelly. Nov 78, 51p AFOSR-TR-79-0079
Grant AFOSR-77-3446

Descriptors: *Aircraft fires, *Fuel sprays, *Ignition, Aviation safety, Experimental data, Stabilization, Heat of combustion, Test facilities, Fire hazards, Surface temperature.

This first annual report discusses a research project undertaken to investigate experimentally and theoretically the ignition of fuel sprays by hot surfaces and the stabilization of aircraft fires related to aircraft fire safety. The basic problems are outlined, and the experimental facilities developed for the research are described, along with a discussion of operating experience to date. (Author)

AD-A065 172/9GA PC **A15**/MF **A01**
Bell Helicopter Textron, Fort Worth, TX.
OH-58 Composite Main Rotor Blade. Preliminary Design Investigation. Volume I. Composite Blade Evaluation.
Final rept. Oct 77-Mar 78,
V. Hubert Brogdon, J. Braswell, F. Freeman, J. Yen, and T. Mullan. Dec 78, 335p 699-099-086, USARTL-TR-78-38A
Contract DAAJ02-77-C-0073

Descriptors: *Rotor blades(Rotary wings), *Helicopter rotors, *Composite materials, Survival(General), Damage assessment, Tolerances(Mechanics), Filament wound construction, Radar cross sections, Spars, Glass fibers, Epoxy resins, Honeycomb structures, Airfoils.
Identifiers: OH-58 helicopters, H-58 helicopters.

No abstract available.

AD-A065 256/0GA PC **A03**/MF **A01**
Royal Aircraft Establishment, Farnborough (England).
An Analysis of a Programmed Load Fatigue Failure.
Technical rept.,
C. J. Peel. 14 Jul 78, 29p RAE-TR-78078, DRIC-BR-65871

Descriptors: *Aluminum alloys, *Fatigue(Mechanics), Loads(Forces), Cyclic rate, Fittings, Airframes, Scaling factors, Simulation, Laboratory tests, Crack propagation, Fractography, Amplitude, Defects(Materials), Forging, Electron microscopes, Great Britain.

The assessment of the airworthiness of an aircraft structure is based normally upon the results of full-scale laboratory fatigue testing of components of the aircraft. Ideally, these full-scale fatigue tests should duplicate the working environmental of the aircraft. A correct simulation of the natural loadings and environmental conditions is, however, virtually impossible and usually the full-scale tests are simplified to the repeated application of a programme of loading cycles applied under laboratory conditions. The interpretation of the results of such tests is still complicated by the nature of the loading sequence, the complex geometry of the full-scale components and materials variables. This Report illustrates, in detail, a fractographic technique for the analysis of a typical full-scale test of an undercarriage fitting. The technique enables the effects of the programme of variable amplitude loads to be

separated from those of defects in the forging and the introduction of the concept of an effective load, representing the entire sequence of variable amplitude loads, allows a fatigue life to be predicted for a defect-free forging. The fractographic technique relies upon the measurement, in the scanning electron microscope, of the spacings of fatigue crack striations that are formed on the fracture surface.

AD-A065 268/5GA PC **A20**/MF **A01**
United Technologies Corp., Stratford, CT. Sikorsky Aircraft Div.
Helicopter Transparent Enclosures. Volume I. Design Handbook.
Final rept.,
Brue F. Kay. Jan 79, 461p SER-50966, USARTL-TR-78-25A
Contract DAAJ02-74-C-0065
See also Rept. nos. USARTL-TR-78-25B and USARTL-TR-78-26.

Descriptors: *Helicopters, *Cockpits, *Windshields, *Human factors engineering, Transparence, Visibility, Laminates, Ice prevention, Glint, Abrasion, Windows, Canopies, Inspection, Acceptance tests, Protection, Bird strikes, Small arms ammunition, Structural analysis, Optics, Radar cross sections.
Identifiers: Structural design.

The Volume I design handbook is a comprehensive guide to the development of helicopter transparent enclosures. The handbook is structured in a manner that generally parallels the sequence of considerations used to develop helicopter transparencies. Separate chapters are devoted to subjects pertinent to the design, analysis and testing of transparent enclosures. Special characteristics and material properties are presented as applicable.

AD-A065 298/2GA PC **A06**/MF **A01**
Hughes Helicopters, Culver City, CA.
Evaluation of an Energy Distribution System for Helicopter Landing Gears During Hard Landing.
Final rept. 1 Mar 77-Sep 78,
A. H. Logan, C. A. Waldon, and E. Fourt. Nov 78, 120p HH-78-149, USARTL-TR-78-44
Contract DAAJ02-77-C-0019

Descriptors: *Landing gear, *Helicopters, Aircraft landings, Energy absorbers, Impact shock, Helicopter rotors, Autorotation, Nose wheels, Pitch(Motion), Drop tests, Hydraulic equipment, Impact strength.
Identifiers: OH-6A Helicopters, H-6 Helicopers.

An experimental program was conducted to evaluate a landing gear concept that redistributes the impact energy of an autorotational landing. This landing gear concept redistributes the impact energy by providing an interconnection between the front and rear landing gears. Through the interconnection, as the rear landing gear moves from the flight position toward the full compressed position under landing impact, the front gear is impelled to move from the flight position toward the fully extended position. When these motions have been accomplished, the skids remain on the ground surface throughout the landing, greatly reducing the pitching moments. The landing gear was drop tested to demonstrate the effects of sink rate, gross weight, center-of-gravity (CG) location, touchdown attitude (both pitch and yaw), ground resonance, system damping, and spring rate. The testing included drop velocities up to 19.5 feet per second and simulated forward and lateral speed landings. For purpose of design and development, the OH-6A helicopter was used as the baseline aircraft, and the landing gear was designed to require minimum modification to the OH-6A. The results of the testing showed that the interconnected landing gear reduces the nosedown pitching velocities and angles during autororation landings. A cost analysis indicated that incorporation of the interconnected landing gear in new production aircraft would result in a return on investment greater than 2:1.

AD-A065 462/4GA PC **A04**/MF **A01**
United Technologies Corp., Stratford, CT. Sikorsky Aircraft Div.
Helicopter Transparent Enclosures. Volume II. A General Specification.
Final rept.,
Bruce F. Kay. Jan 79, 64p SES-501011, USARTL-TR-78-25B
Contract DAAJ02-74-C-0065
See also Volume 1, AD-A065 268.

Descriptors: *Specifications, *Helicopters, Transparencies, Aircraft, Handbooks, Test methods, Performance(Engineering).

The Volume I design handbook is a comprehensive guide to the development of helicopter transparent enclosures. The handbook is structured in a manner that generally parallels the sequence of considerations used to develop helicopter transparencies. Separate chapters are devoted to subjects pertinent to the design, analysis and testing of transparent enclosures. Special characteristics and material properties are presented as applicable.

AD-A065 479/8GA PC **A02**/MF **A01**
Army Missile Research and Development Command, Redstone Arsenal, AL. Technology Lab.
Drag Investigations of Towed Target Banners.
Technical rept.,
Gary Morr, and Donald Rubin. 11 Dec 78, 23p
Rept no. DRDMI-T-79-5

Descriptors: *Towed targets, Drag reduction, Aerial targets, Low altitude, Flight testing, Nylon, Porosity, Weight, Rectangular bodies, Aerodynamic drag, Tow bars, Polypropylene, Textiles, Flags, Antiaircraft gunnery, Army training.
Identifiers: Gunnery banners.

Gunnery banners are presently used by the Army as targets for air defense gun and missile systems. The standard banner is a 2- x 12-ft rectangular configuration and is normally towed 500 ft from the tractor vehicle. The drag coefficient for this banner is 0.0364, which is five to seven times greater than that of an equivalent flat plate. In order to investigate lower drag banners, a series of manned flight tests were conducted in the spring of 1975. These tests were done for a series of full-scale target banners to determine the influence on drag of flight Reynolds number, the ratio of length to width, planform shape, material properties, and towbar configuration. (Author)

N79-19414/8GA PC **A06**/MF **A01**
California Univ., Los Angeles.
Nonlinear Equations of Equilibrium for Elastic Helicopter or Wind Turbine Blades Undergoing Moderate Deformation.
Final Report.
A. Rosen, and P. P. Friedmann. Dec 78, 104p
NASA-CR-159478, UCLA-ENG-7718
Grant NSG-3082, Contract E(49-26)-1028

Descriptors: *Aeroelasticity, *Dynamic structural analysis, Equilibrium equations, Nonlinear equations, *Rotary wings, *Turbine blades, Derivation, Elastic deformation, Loads(Forces), Rigid structures.

For abstract, see STAR 1710

PATENT-4 087 063 Not available NTIS
Department of the Navy Washington DC
Parachute Suspension Line Stowage Device.
Patent,
Larry G. Caffey. Filed 6 Jun 77, patented 2 May 78, 6p AD-D005 804/0, PAT-APPL-804 032
Supersedes PAT-APPL-804 032-77, AD-D004 173.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $0.50.

Descriptors: *Patents, *Parachute packs, Suspension devices, Storage, Assembly, Kits, Deployment, Reliability.
Identifiers: PAT-CL-244-148.

A parachute suspension line stowage assembly kit is provided for a parachute pack container that is more compact making more space available in the pack for housing other components of the parachute system and enabling a smaller size container. The assembly is fabricated basically of fabric material mounted on a rigid support plate for forming pockets for a plurality of looped parachute suspension lines. The novel stowage device is capable of withstanding higher shock loads; and is adaptable to different size parachute containers. (Author)

PATENT-4 140 291 Not available NTIS
Department of the Air Force Washington DC
Ramp Toe Stowage System.
Patent,
Donald E. Evans, and Lewell M. Lively, Jr. Filed 13 Oct 77, patented 20 Feb 79, 14p AD-D005 818/0, PAT-APPL-841 776
Supersedes PAT-APPL-841 776-77, AD-D004 488.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $0.50.

Descriptors: *Patents, *Aircraft equipment, *Ramps, *Appendages, Tails(Aircraft), Storage, Aircraft, Short takeoff aircraft, Transport aircraft, Loading(Handling).
Identifiers: PAT-CL-244-118, Ramp Toe Storage System.

The invention relates to a structural system for capturing, supporting, and releasably securing a tail ramp toe of an aircraft, while the aircraft is either on the ground or in flight. The preferred embodiment of the ramp tow stowage system is adapted for use with a cargo aircraft having: a downwardly and outwardly opening tail ramp, with at least one ramp toe removably attached to it; and, an upwardly and inwardly opening tail door that is complementary to, and aft of, the tail ramp, with the tail door having an internal surface. The stowage system is located over, and is attached to, the internal surface of the tail door, and includes two horizontally positioned tracks that accept complementary guide rollers which are on the side edges of the ramp toe, near the known center of gravity of the toe. Unlike the prior art, the system requires only one man to stow the ramp toe, or to release it from stowage, even while the aircraft is in flight.

1D. Aircraft Flight Control and Instrumentation

AD-A065 018/4GA PC **A04**/MF **A01**
Army Aviation Research and Development Command, St. Louis, MO.
Stabilized Terrain Optical Position Sensor (STOPS) Flight Test Report,
Technical rept.,
Christos M. Tsoubanos. Jan 79, 54p Rept no. USAAVRADCOM-TR-79-1

Descriptors: *Flight control systems, *Hovering, *Helicopters, Flight testing, Brassboard models, Night vision devices, Image processing, Display systems, Computer applications, Position finding, Accuracy.
Identifiers: STOPS(Stabilized Terrain Optical Position Sensor), Stabilized Terrain Optical Position Sensensor.

This report presents the flight test results and evaluation of a brassboard model self-contained hover position sensor and obstacle clearing device. The brassboard model of the self-contained, absolute, position sensor referred as Stabilized Terrain Optical Postion Sensor (STOPS) was successfully installed and flown on the Avionics Research and Development Activity's Experimental Vehicle for Avionics Research (EVAR) project helicopter. The results derived from the test indicate that position radial accuracies of better than 5 feet can be expected at constant (60 feet AGL) altitude. For mission maneuvers such as the bob-up and remask, designed for the AAH, position radial errors are in the order of 10 to 20 feet. (Author)

AD-A065 072/1GA PC **A04**/MF **A01**
Army Aviation Engineering Flight Activity, Edwards AFB, CA.
Flight Evaluation MK II Integrated Controller Installed in an OH-58A Helicopter.
Final rept.,

John F. Hagen, Patrick J. Moe, and Ralph Woratschek. Apr 78, 66p Rept no. USAAEFA-77-11

Descriptors: *Flight control systems, Helicopters, Flight testing, Pilots, Man machine systems, Handling, Flight maneuvers, Job analysis, Aircraft landings, Turning flight, Integrated systems, Manual operation, Decoupling(Interaction), Roll, Pitch(Motion).
Identifiers: Workloads(Human), H-58 helicopters, OH-58A helicopters, Mark-2 integrated controllers.

This Activity conducted a limited handling qualities and pilot workload evaluation of the MK II integrated controller installed in an OH-58A helicopter. The evaluation consisted of 22 flights for 15.2 hours of productive flight test time. The OH-58A could be safely flown throughout the recommended flight envelope using the integrated controller. The pilot workload when using the integrated controller with two hands was not reduced from and was sometimes greater than the workload when using conventional controls for all maneuvers except level forward flight. Single hand control during flight and landing could be safely accomplished, but required increased pilot workload in all cases. The two most serious unsatisfactory characteristics identified were lack of an adequate system-decoupled warning and excessive workload during left sideward flight between approximately 15 to 25 knots true airspeed. Three unsatisfactory characteristics that contributed to the increased workload when using the integrated controller were excessive longitudinal and lateral integrated controller response and sensitivity, lack of control displacement harmony between the integrated controller cyclic and collective controls, and inadvertent cyclic control inputs with collective control movement. The reduced longitudinal and lateral control authority, which limited the aircraft's forward flight capability at aft center of gravity, rearward flight capability at forward center of gravity, and slope landing capability, was also an unsatisfactory characteristic. Eight additional unsatisfactory characteristics were also identified.

AD-A065 136/4GA PC **A14/MF A01**
Charles Stark Draper Lab., Inc., Cambridge, MA.
An Integrated Fault-Tolerant Avionics System Concept for Advanced Aircraft.
Final rept.
1 Feb 79, 325p Rept no. R-1226
Contract N00019-78-C-0572

Descriptors: *Naval aircraft, *Avionics, Jet fighters, Transport aircraft, Vertical takeoff aircraft, Short takeoff aircraft, Helicopters, Flight control systems, Navigation, Display systems, Communication equipment, Fault tolerant computing, Integrated systems, Military applications, Maintainability, Modular construction, Life cycle costs.

A conceptual baseline design for a highly integrated fault- and damage-tolerant avionics architecture is presented. The architecture is generic in nature, and applicable to a broad range of aircraft types; including CTOL, VTOL, and V/STOL; and all classes from supersonic fighters to transports. The architecture embodies pools of modular resources, configured to flexibly serve required functions on a priority basis. By including system elements which can serve multiple functions and taking maximum advantage of systematic fault-tolerance methods and procedures, the design tends to minimize replication of elements and overall complexity. In concert with logistics and maintenance procedures designed around the pooled modular element approach, the architecture can provide required performance, reliability, damage tolerance, and availability at minimum life-cycle costs. Its inherent flexibility allows it to readily incorporate a wide variety of mission-specific elements and to easily adapt to growth and change as new elements and requirements arise. (Author)

AD-A065 444/2GA PC **A02/MF A01**
Advisory Group for Aerospace Research and Development, Neuilly-sur-Seine (France).
Technical Evaluation Report on the Flight Mechanics Panel Symposium on Stability and Control.
Advisory rept.,
Charles R. Chalk. Jan 79, 20p Rept no. AGARD-AR-134

Descriptors: *Flight control systems, *Aircraft, Aerodynamic stability, Cost effectiveness, Reliability, Maintainability, Aircraft maintenance.

This report evaluates the AGARD Flight Mechanics Panel Symposium on Stability and Control held from 25-28 September 1978 at Ottawa, Canada. The primary conclusions of the report are that the technology exists to permit application of CCV and active control concepts to operational aircraft; however, questions remain concerning the operational need and the cost effectiveness of many of the concepts that are technically feasible. The main factors impeding implementation of CCV and active control concepts are cost, reliability and maintainability.

N79-18973/4GA PC **A12/MF A01**
Southern Illinois Univ., Carbondale. Dept. of Electrical Sciences and Systems Engineering.
GASP-PL/1 Simulation of Integrated Avionic System Processor Architectures.
M.S. Thesis.
G. A. Brent. Sep 78, 274p NASA-CR-158244
Grant NSG-2238

Descriptors: *Aircraft instruments, *Architecture(Computers), *Avionics, *Computer programming, *PL/1, Computer programs, Computer systems programs, Computerized simulation, Hardware, Programming languages.
Identifiers: GASP-PL/1 computer program, PL/1 programming language.

For abstract, see STAR 1710

PAT-APPL-6-011 834/GA PC **A02/MF A01**
Department of the Navy Washington DC
Display Processor for Aircraft Landing System.
Patent Application,
Bernard L. Lewis. Filed 13 Feb 79, 20p AD-D005 828/9
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

Descriptors: *Patent applications, *Landing aids, *Television display systems, Instrument landings, Minicomputers, Control systems.

This patent application discloses a circuit for processing the azimuth error video signal of a monopulse receiver in an aircraft to separately but simultaneously display the heading and position of the craft. The azimuth error signal is simultaneously applied to a sample-and-hold (SAH) circuit, a delay means and a one-shot multivibrator (MV). The MV opens the SAH to accept the first ground-transmitter signal in a sequence, the SAH charging a capacitance to the magnitude of the signal, and then prevents the SAH from accepting any further signals in the sequence. The output of the SAH is subtracted from the delayed signal to obtain a video subtracter is subtracted from the delayed signal to obtain a video signal indicative of the aircraft heading. (Author)

1E. Air Facilities

AD-A065 461/6GA PC **A11/MF A01**
Federal Aviation Administration, Washington, DC. Systems Research and Development Service.
SRDS Technical Program Document. Fiscal Year 1979. Research and Development Approved Projects.
Jan 79, 231p Rept no. FAA/RD-79-2

Descriptors: *Civil aviation, *Air traffic control systems, *Navigation aids, Automation, Navigation, Weather, Landing aids, Aircraft landings, Aviation safety, Airports, Commercial aviation, Radar, Beacons, Communication and radio systems, Reports.

This document contains research and technology resumes which reflect Systems Research and Development Service, Federal Aviation Administration, approved projects. These resumes highlight the requirement, technical objective, approach, milestones scheduled for accomplishment, and end item products. Engineering and development topics include: Radar, Beacon, Navigation, Airborne separation assurance, Communications, Approach and landing systems, ATC systems command center automation, Enroute control, Flight service stations, Terminal/Tower control, Weather, and Aircraft safety.

AD-A065 473/1GA PC **A02/MF A01**
National Aviation Facilities Experimental Center, Atlantic City, NJ.
Evaluation of a Remote Tone Signaling Control/Monitor System as Lightning/Transient Protection for Solid State Instrument Landing Systems.
Final rept. Aug 76-Apr 78,
James R. Branstetter. Jan 79, 24p FAA-NA-78-35, FAA-RD-78-149

Descriptors: *Instrument landings, Remote control, Monitoring, Signals, Lightning, Test and evaluation, Errors, Damage, Reduction, Solid state electronics, Microprocessors.

A new technique in remote control and monitoring of a solid-state instrument landing system (ILS) was evaluated at the National Aviation Facilities Experimental Center (NAFEC) intended as a solution to problems caused by lightning and transients on phone lines and buried cables. The findings show the system effectively reduces or eliminates false transmitter cycling, erroneous status indications, and damage to the ILS equipment. (Author)

NTIS/PS-79/0422/0GA PC **N01/MF N01**
National Technical Information Service, Springfield, VA.
Airport Development: Social and Economic Effects (A Bibliography with Abstracts).
Rept. for 1968-May 79,
Edith Kenton. May 79, 91p*
Supersedes NTIS/PS-78/0447, and NTIS/PS-77/0441.

Descriptors: *Bibliographies, *Airports, *Regional planning, Urban areas, Economic development, Air pollution, Aircraft noise, Attitudes, Technical assistance, Feasibility, Cost effectiveness, Public opinion, Project planning, Transportation management, Air traffic, Land acquisition, Land use, Relocation, Eminent domain, Citizen participation, Quality of life, Economic impact, Public relations.
Identifiers: Industrial parks, Military base utilization, Air quality maintenance, Land banking, Property values.

The reports cited in this bibliography involve many phases of airport development relating to local regions and communities. They include physical design, planning, construction, operations, policies, and impacts. Studies of feasibility, conversion-utilization of military facilities, economic impact, public attitudes, and cost effectiveness are included. Municipal and rural relations, political issues, controversies, and technical assistance programs are described. (This updated bibliography contains 82 abstracts, 21 of which are new entries to the previous edition.)

2. AGRICULTURE

2B. Agricultural Economics

PB-293 255/6GA PC **A03/MF A01**
Economics, Statistics, and Cooperatives Service, Washington, DC. National Economic Analysis Div.
An Analysis of a Ban on Nitrite Use in Curing Bacon.
Final rept.
Mar 79, 28p ESCS-48
See also report dated Dec 78, PB-289 795.

Descriptors: *Carcinogens, *Curing, *Nitrites, *Pork, *Agricultural economics, Meat, Regulations, Carcinogens, Sodium inorganic compounds, Secondary amines, Tertiary amines, Assessments, Nitroso compounds, Law(Jurisprudence), Economic impact, Public health, Production, Food consumption, Prices, Estimates.
Identifiers: *Sodium nitrites, Bacon, Nitrosamines.

Nitrate and nitrite use in curing meat has become increasingly controversial since it was discovered that nitrite can interact with secondary and tertiary amines to form carcinogenic nitrosamines. Recent evidence that sodium nitrite itself may be a carcinogen has intensified that debate. Regulatory actions restricting the use of these curing agents

have already been taken, and others are being discussed. An assessment is made of the economic impacts that might occur in the agricultural sector and to consumers from an immediate ban on the use of nitrite to cure bacon made from pork bellies. Estimates are made of the expected direction of changes in prices, production, and consumption.

PB-293 345/5GA PC **A04**/MF **A01**
Economics, Statistics, and Cooperatives Service, Washington, DC. Commodity Economics Div.
Factors Affecting Supply, Demand, and Prices of U.S. Rice.
Final rept. 1950-76,
Warren R. Grant, and Mack N. Leath. Mar 79, 63p* ESCS-47

Descriptors: *Economic factors, *Rice, United States, Production, Prices, Supply(Economics), Demand(Economics), Economic models, Least squares method, Yield, Statistical analysis, Real variables, Elastic properties, Food consumption, Farms, Exports, Government policies.

The study estimated the interrelationships of economic and institutional factors that affect supply, demand, and prices for U.S. rice. A model was developed and estimated, using the three stage least squares method. Rice yields are affected by the climatic conditions in each area, technological changes, area in rice, and other factors. Lagged farm price did not appear to influence rice yields during 1950-76. Farm price, Government programs, and carryover affect area. Production response to a price change (elasticity) varies from 0.25 in Texas and Mississippi to nearly 0.5 in Arkansas. Income and population are the major variables affecting food rice consumption. Changes in retail price have a very minor impact on demand. Government exports are more elastic with respect to prices than are commercial exports. The degree of substitution of government exports for commercial export sales is relatively low.

PB-293 426/3GA PC **A04**/MF **A01**
Lake Champlain Basin Study, Burlington, VT.
The Economic Viability of Agricultural Land in the Shoreland Towns of Lake Champlain.
Final technical rept. Jun-Aug 77,
Mark B. Lapping, Steven Lamphear, Philip Berke, Nancy Clifton, and Ronald Feldman. May 78, 62p LCBS-09
Prepared by Vermont Univ., Burlington. Report on Lake Champlain Basin Study.

Descriptors: *Land use, *Farms, *Agricultural economics, *Lake Champlain Basin, Sites, Taxes, Ratings, Urban areas, Investments, Income, Classifications, New York, Vermont.
Identifiers: Ownership, Land conversion.

Traditionally hydrologic, climatic, and soils data were used to determine economic viability of farmland. Alone, however, these criteria do not define prime agricultural soils. Farm location relative to agribusiness, proximity of farms to other farms, level of farm investment, farm land ownership, and land capability also influence the economic viability of agricultural land. Another group of factors affecting farm viability are those pressures on the land which encourage convrsions to nonfarm uses. This pressure often shows itself in escalating cost for land, rising property taxes, and the appearance of more intensive land uses in formerly rural areas. The objective of this project was to develop a system for evaluating the economic viability of agricultural lands located in the New York and Vermont towns adjacent to Lake Champlain. It is designed in such a way that local authorities in any community could use the classification for local planning purposes.

PB-293 432/1GA PC **A04**/MF **A01**
Lake Champlain Basin Study, Burlington, VT.
The Future Role of Agriculture in the Lake Champlain Basin.
Final rept.,
Mark B. Lapping, and Ronald Feldman. Aug 78, 63p LCBS-15
Prepared by Vermont Univ., Burlington. Report on Lake Champlain Basin Study.

Descriptors: *Agricultural economics, *Lake Champlain Basin, Land use zoning, Farms, Market value, Dairy cattle, Fertilizers, Taxes, Recommendations, Vermont, New York.
Identifiers: Land conversion.

Agricultural land in shoreland communities around Lake Chamlain is being converted to other uses at an increasing rate. Loss of farmland is a particular problem in the urbanizing counties of Chittenden County V(Vermont) and Clinton County (New York). This study explored these changes and examined methods and techniques available to stem this tide. While dairy is expected to continue as the major agricultural activity in the area, findings of the study suggest that other aspects of farming will enjoy increased attention. Several farmland preservation techniques are being utilized in the basin. Among these are differential tax assessment and local tax stabilization; capital gains taxation; agricultural districting, zoning, and other land use controls.

PB-293 610/2GA PC **A07**/MF **A01**
Texas A and M Univ., College Station. Water Resources Inst.
The Economic Value of Irrigation Water in the Western United States: An Application of Ridge Regression.
Technical completion rept.,
Michael D. Frank, and Bruce R. Beattie. Mar 79, 143p TR-99, W79-05399, OWRT-A-034-TEX(1)
Contracts DI-14-34-0001-6045, DI-14-34-0001-7091
Sponsored in part by Contracts DI-14-34-0001-7092 and DI-14-34-0001-8046.

Descriptors: *Economic analysis, *Irrigation, *Agricultural economics, Water consumption, Prices, Regression analysis, Output, Expenses, Manpower, Value, Fertilizers, Livestock, Agricultural machinery, Estimates, Least squares method, Correlation.
Identifiers: *Irrigation water, *Water values, Water demand, Western Region(United States).

This study reports marginal water values and demand elasticities for eleven major irrigated regions in the West. Agricultural output in each region was hypothesized to take the form of a multiplicative function with nine domain variables--irrigation water applied, value of land and buildings, hired labor expenditures, fuel and lubricant expenditures, fertilizer and lime expenditures, feed expenditures, value of machinery inventory, value of livestock inventory and miscellaneous expenditures. Using 1969 Census of Agriculture data, each regional function was estimated using both ordinary least squares (OLS) and ridge regression. For the ridge analysis, all parameter estimates, except one, took on the expected positive sign and the standard errors were decreased in every case. Marginal irrigation water values were estimated for 1969 at the respective regional mean values of water usage, fixed input levels and variable input prices.

PB-294 035/1GA PC **A22**/MF **A01**
Development Alternatives, Inc., Washington, DC.
Strategies for Small Farmer Development: An Empirical Study of Rural Development Projects. Volume I.
Final rept.,
Elliott R. Morss, John K. Hatch, Donald R. Mickelwait, and Charles F. Sweet. May 75, 513p
Contract AID/CM/ta-C-73-41
See also Volume 2, PB-294 036.

Descriptors: *Farm management, Developing countries, Productivity, Personnel development, Rural areas, Project planning, Models, Farm crops, Cooperation.
Identifiers: Developing country application.

The purpose of this report is to provide information on what can be done to increase the well-being and productivity of the small farmer in the Third World so as to become self-sustaining. The volume is divided into five chapters with the following topics: (1) research and focus; (2) project success; (3) local action; (4) project components for small farmer development; and (5) summary of findings and their implications for AID and other major donors. Three appendices cover methodology; information systems to support rural development projects; and implication of the findings for future research.

PB-294 036/9GA PC **A19**/MF **A01**
Development Alternatives, Inc., Washington, DC. Agency for International Development, Washington, DC.
Strategies for Small Farmer Development: An Empirical Study of Rural Development Projects. Volume II. Case Studies.
Charles F. Sweet, Elliott R. Morss, John K. Hatch, and Donald R. Mickelwait. May 75, 443p
Contract AID/CM/ta-C-73-41
See also Volume 1, PB-294 035.

Descriptors: *Farm management, *Project planning, Productivity, Developing countries, Rural areas, Models, Farm crops, Cooperation.

This document is a complement to the analysis in Volume I. It is comprised of 36 write-ups of the projects studied.

PB-294 246/4GA PC **A03**/MF **A01**
Farm Credit Administration, Washington, DC.
Le Systeme de Credit Agricole Cooperatif aux Etats-Unis (The Cooperative Farm Credit System).
Jan 61, 34p
Text in French. Sponsored in part by Agency for International Development, Washington, DC.

Descriptors: *Credit, *Agriculture, *Developing countries, Finance, Organization theory, Cooperation, Sources, History, Farm management, Financial management.
Identifiers: *Financial services, Loans, Developing country application.

The basic functions and organization of a farm credit system are outlined in this manual for developing countries. Detailed analysis is given for sources of agricultural credit, and a history of the U.S. Agricultural Credit Cooperative is given. The Cooperative's methods of response to the needs of its members is thoroughly explained.

PB-294 411/4GA PC **A04**/MF **A01**
Economic Research Service, Washington, DC.
Leaf Protein Concentrate (PRO-XAN) from Alfalfa: An Economic Evaluation.
Agricultural economic rept.,
C. J. Vosloh, Jr., R. H. Edwards, and R. V. Enochian. Sep 76, 59p USDA/AER-346
Sponsored in part by Agency for International Development, Washington, DC.

Descriptors: *Proteins, *Feeding stuffs, *Agricultural economics, *Economic analysis, Operating costs, Plant tissues, Extraction, Labor estimates, Equipment, Investments, Industrial plants, Distillation.
Identifiers: *Pro-Xan process, Alfalfa, Developing country application, Wet methods.

Extraction of leaf protein concentrate (Pro-Xan) from alfalfa for use in various livestock feeds provides new investment opportunities under a wide variety of conditions. This report evaluates four systems for making this extraction and the effect of four variables on the annual rate of return on investment. The four systems differ in the method of expressing juice from the fresh alfalfa and the yield of Pro-Xan. The system in which the alfalfa is ground prior to pressing, and which has a Pro-Xan yield of 12 percent, had the highest rate of return on investment. The four variables evaluated were the method of utilizing the press cake remaining after the Pro-Xan containing juice is expressed, the method of disposition of alfalfa solubles remaining after the Pro-Xan is recovered from the juice, the length of operating season, and the size of the processing plant. The most profitable method of solubles disposition is dependent upon the feasibility of disposing of them in a nearby irrigation system, the price that can be obtained for them when concentrated for use as a feed ingredient, and the price of natural gas.

2C. Agricultural Engineering

E79-10121 PC **A03**/MF **A01**
National Aeronautics and Space Administration, Houston, TX. Lyndon B. Johnson Space Center.

Large Area Crop Inventory Experiment (LACIE). YES Phase I Yield Feasibility Report (LACIE-00439).
Jan 77, 43p NASA-TM-79985, JSC-11668
Sponsored in part by National Oceanic and Atmospheric Administration, Rockville, MD., and Department of Agriculture, Washington, DC.

Descriptors: *Large Area Crop Inventory Experiment, Yield, *Wheat, Great Plains Corridor(North America), North Dakota, Kansas, Oklahoma, Nebraska, Montana, Texas, Colorado, South Dakota, Minnesota, Skylab program, EREP, Statistical analysis, Tables(Data).
Identifiers: *Grain crops.

The author has identified the following significant results. Each state model was separately evaluated to determine if a projected performance to the country level would satisfy a 90/90 criterion. All state models, except the North Dakota and Kansas models, satisfied that criterion both for district estimates aggregated to the state level and for state estimates directly from the models. In addition to the tests of the 90/90 criterion, the models were examined for their ability to adequately respond to fluctuations in weather. This portion of the analysis was based on a subjective interpretation of values of certain description statistics. As a result, 10 of the 12 models were judged to respond inadequately to variations in weather-related variables.

JPRS-72779 PC**$7.50**/MF **A01**
Joint Publications Research Service, Arlington, VA.
Harvesting of Grain and Pulse Crops,
E. V. Zhalnin, A. S. Mnatsakanov, and A. I. Filippov. 7 Feb 79, 89p VAAP/SA-78/01
Trans. of mono. Uborka Zernovykh i Zernobobovykh Kul'tur, Moscow, 26 Jun 75, p1-87.

Descriptors: *Harvesters, *Agricultural machinery, Grain crops, Grasses, Leguminous plants, Harvesting, Defects, Hydraulic equipment, Design, Maintenance, Translations, USSR.

This report contains brief information on the structural characteristics of modern grain harvesting combines and harvesters and on their principal adjustments. Some of the more progressive methods for employing equipment in the harvesting of grain and pulse crops are discussed.

PB-293 156/6GA PC **A05**/MF **A01**
Alcorn State Univ., Lorman, MS. Dept. of Animal Science.
Overland Recycling System for Animal Waste Treatment.
Final rept. 1 Jan 74-30 Sep 77,
Harold E. Grier, and Willie C. Burton. Jan 79, 85p EPA/600/2-79-029
Grant EPA-R-802336

Descriptors: *Swine, *Lagoons(Ponds), *Agricultural wastes, *Water pollution control, Irrigation, Anaerobic processes, Aerobic processes, Substitutes, Water pollution, Runoff, Soils, pH, Inorganic nitrates, Chlorides.
Identifiers: *Animal wastes, *Spray irrigation systems, *Water quality, Land disposal, Manure.

Twelve 6 x 6 meter plots were designed to receive overland spray or rainfall only and sloped to direct runoff via plastic lined runoff ditches to one cone shaped plastic lined corner of each plot. These plots were completely randomized over all treatments each treatment having four replications. Treatments consisted of tap water, tap water and aerobic effluent, and aerobic effluent applied so that all plots received equal volumes of overland spray within each of three periods. Periods one, two and three provided 1x, 2x, and 3x as much of the applications on all plots than before treatments. Soil and soil water samples from all plots were analyzed for pH, chloride, NH3-N, NO3-N, and NO2-N, conductance, coliform, and BOD5. These parameters were statistically analyzed according to a completely randomized block design and the means separated for significance using DNMRT. Reduction or increase in principal parameters of concern were noted, as well as response of edible crops to various treatment.

PB-293 344/8GA PC **A03**/MF **A01**
New York State Coll. of Agriculture and Life Sciences, Ithaca.
Energy Requirements for New York State Agriculture. Part 2: Indirect Energy Inputs.
Agricultural extension engineering bulletin,
W. W. Gunkel, D. R. Price, G. M. Lucas, D. L. Murray, and G. L. Casler. 1976, 35p BULL-406
Also pub. as New York State Coll. of Agriculture and Life Sciences, Ithaca. Dept. of Agricultural Economics bulletin-76-24.

Descriptors: *Agriculture, *New York, Fuel consumption, Fertilizers, Fertilizing, Farm crops, Cultivation, Plant nutrition, Transportation, Pesticides, Limestone, Irrigation, Forestry, Natural gas, Electricity, Fuel oil.
Identifiers: *Energy requirements, Energy consumption, Electric power consumption, Energy use.

The objectives of this study were to: (1) determine the most important indirect energy inputs and requirements for agricultural production and processing in New York State, and (2) establish an index or model to use in projecting indirect energy requirements for agricultural production and processing systems.

PB-293 429/7GA PC **A03**/MF **A01**
Lake Champlain Basin Study, Burlington, VT.
A Survey of Farm Practices in the Winooski River Valley.
Final technical rept.
Jun 78, 49p LCBS-12
Prepared by Winooski Natural Resources Conservation District, VT., and Soil Conservation Service, Burlington, VT. Report on Lake Champlain Basin Study.

Descriptors: *Agriculture, *Water pollution, *Winooski River Watershed, *Lake Champlain, Runoff, Sediments, Surveys, Soil erosion, Farm crops, Agricultural wastes, Waste disposal, Fertilizers, Herbicides, Farm management, Land use, Soils, Vermont.
Identifiers: Best technology, Crop rotation, *Nonpoint sources, Manure.

This report evaluated farm practices in the Winooski River watershed. It recognized agricultural runoff as a major contributor to sediment and nutrient pollution in streams and lakes. The report is divided into two parts. It discusses the effect farm pollutants have on water quality and presents a field survey of farm practices along the Winooski River (located in Northern Vermont). Practices which result in unacceptable soil and nutrient losses were identified. They included lack of propercrop rotation, cover crops, bufferstrips, manure management. The amount and timing of commercial fertilizer and herbicide application was studied. Milkhouse waste disposal, another nonpoint pollution source was examined. The report identified state and Federal agencies whose programs address nonpoint source pollution questions. Conservation districts, USDA-Soil Conservation Service, USDA Agricultural Stabilization and Conservation Service, Cooperative Extension Service and numerous departments within the Vermont Agency of Environment Conservation are noted.

PB-293 430/5GA PC **A06**/MF **A01**
Lake Champlain Basin Study, Burlington, VT.
Farm Practices and Environmental Effects: A Literature Review.
Final rept.,
Rick Schwartz, and Paul R. Vachon. Feb 78, 119p LCBS-13
Prepared in cooperation with Cornell Univ., Ithaca, NY. Report on Lake Champlain Basin Study.

Descriptors: *Agriculture, *Environmental impacts, *Water quality management, *Lake Champlain Basin, *Winooski River Basin, Farm crops, Cultivation, Fertilizers, Pesticides, Agricultural wastes, Dairies, Sewage treatment, Lagoons(Ponds), Flooding, Runoff, Livestock, Erosion control, Reviews, Interviews, Vermont.
Identifiers: Best technology, Crop rotation, Nonpoint sources, Northeastern Region(United States).

The purpose of this literature review is to provide technical data, based on studies in Vermont, the Northeast, and the nation (in that order of preference), which assess the potential for existing farm practices to adversely impact water quality in the Lake Champlain Basin. The review documents the opinions and research findings of studies related to farm operation and management, soils science and conservation agricultural chemistry, hydroiogy, and water quality. The interviews were conducted concurrently with the literature review, which assured that the study would focus on the most important concerns, as judged by those persons familiar with regional farming practices and physical characteristics. A Winooski Valley farm practices survey was completed with this project and is given in the report.

PB-294 272/0GA PC **A02**/MF **A01**
Agricultural Research Service, Beltsville, MD. Soil and Water Conservation Research Div.
Sprinkler Irrigation,
Claude H. Pair. Nov 66, 10p LEAFLET-476
Revision of report dated Jul 60.

Descriptors: *Sprinkler irrigation, Manuals, Operations, Pipelines, Sprinklers, Design, Pumping stations, Maintenance, Portable equipment, Selection.
Identifiers: Developing country application.

The operation of a sprinkler irrigation system is outlined in this pamphlet. Discussed are the parts of a system; factors to consider in choosing a system; system design; buying a system; and the operation and maintenance of a system.

2D. Agronomy and Horticulture

PB-293 479/2GA PC **A08**/MF **A01**
Montana Agricultural Experiment Station, Bozeman.
Research on Revegetation of Surface Mined Lands at Colstrip, Montana: Progress Report, 1975-1977,
Edward J. DePuit, Joe G. Coenenberg, and Walte H. Willmuth. Mar 78, 174p
Sponsored in part by Western Energy Co., Butte, MT.

Descriptors: *Strip mining, *Vegetation, *Land reclamation, Research projects, Spoil, Precipitation(Meteorology), Soil water, Trees(Plants), Leguminous plants, Pine trees, Grain crops, Mulches, Grasses, Soil properties, Fertilizers, Planting, Seeds, Mixtures, Montana.
Identifiers: Colstrip(Montana).

Revegetation of the spoils surface is an essential phase of reclamation of strip mined lands in the semi-arid west, and it is critical to establish vegetation on freshly reshaped mine spoils as quickly as possible for site stabilization. The present use of most lands overlying coal deposits in eastern Montana is livestock grazing, and most revegetation research in the region has been designed to evaluate methods of establishing various types of grazing lands on mine spoils. However, in a few locations in Montana and more commonly to the east in North and South Dnkota, the pre-mining land use is for agricultural cropland, and the possibility of reclaiming spoils for agronomic uses is also being considered. The report describes progress on a number of revegetation research projects conducted at Colstrip, Montana from 1975 to 1977. These projects address a variety of specific problems concerning mined land revegetation.

PB-293 759/7GA PC **A03**/MF **A01**
Oregon State Univ., Corvallis. International Plant Protection Center.
Weed Control Systems and Systems Utilization for Representative Farms in Developing Countries.
Annual rept. 1977-78.
1978, 35p 22-C-78
Sponsored in part by Agency for International Development, Washington, DC.

Descriptors: *Weed control, *Developing countries, Systems engineering, Utilization, Farm management, Technology, Agricultural economics, Economic factors, Production, Project planning, Research management, Financial management, Technical assistance, Information services.

Identifiers: *Oregon State University, *Agricultural research projects, Developing country application.

The booklet is the annual report of the AID/Oregon State University weed control system research project. Discussed are the program's objectives, a review of activities, a work plan, financial review, and appendixes which include a bibliographic list, word distribution of program materials and publications, and a list of project personnel.

PB-293 786/0GA PC **A13**/MF **A01**
Rubber Research Inst. of Sri Lanka, Agalawatta.
Journal of the Rubber Research Institute of Sri Lanka, Volume 54, Part 1, Number 1.
1977, 280p
Also pub. as ISSN 0035-9531. Sponsored in part by Agency for International Development, Washington, DC. See also Volume 54, Part 1, Number 2, PB-293 787.

Descriptors: *Trees(Plants), *Growth, *Rubber industry, *Meetings, *Developing countries, Plant genetics, Elastomers, Production, Germination, Planting, Harvesting, Indonesia, Malaysia, Cost analysis, Prices, Yield, Latex, Tables(Data), Tropical regions.
Identifiers: Developing country application, *Hevea.

This journal presents the conference proceedings of the Rubber Research Institute of Sri Lanka for the purpose of exchanging knowledge in the rapid advances being made in the field of rubber technology. The journal includes nineteen reports presented at the conference by those associated with the rubber industry. A list of references is provided with each report.

PB-293 787/8GA PC **A12**/MF **A01**
Rubber Research Inst. of Sri Lanka, Agalawatta.
Journal of the Rubber Research Institute of Sri Lanka, Volume 54, Part 1, Number 2.
1977, 254p
Also pub. as ISSN 0035-9531. Sponsored in part by Agency for International Development, Washington, DC. See also Volume 54, Part 1, Number 1, PB-293 786.

Descriptors: *Trees(Plants), *Plant growth, *Developing countries, *Meetings, Production, Elastomers, Fertilizers, Phosphorus, Nitrogen, Plant diseases, Fungicides, Plant reproduction, Planting, Malaysia, Education.
Identifiers: Developing country application, *Hevea.

This journal is the second part of the conference proceedings of the Rubber Research Institute of Sri Lanka presented for the purpose of exchanging knowledge in the rapid advances being made in the field of rubber technology. Included in this journal are twenty reports presented at the conference by those associated with the rubber industry. Also included is a reference list with each report.

2E. Animal Husbandry

PB-293 872/8GA PC **A04**/MF **A01**
Agricultural Research Service, Beltsville, MD. Animal Disease and Parasite Research Div.
Parasites Internes du Porc (Internal Parasites of Swine).
1967, 63p FARMERS/BULL-1787
Text in French. Sponsored in part by Agency for International Development, Washington, DC.

Descriptors: *Parasites, *Swine, Preventive medicine, Therapy, Livestock, Domestic animals, Protozoa, Trematoda, Nematoda, Worms.
Identifiers: Developing country application, Cestoda.

The book presents a thorough study of the general effects of internal parasites, preventive measures, and treatment for the elimination of parasites. Four separate chapters are devoted to Protozoa, Trematodes, Cestodes, and Nematodes; in all seventeen separate varieties of parasites are discussed. A resume of preventive measures is included.

PB-294 284/5GA PC **A04**/MF **A01**
Agricultural Research Service, Washington, DC.
Maladies Communes et Parasites des Volailles (Communicable Diseases and Parasites of Chickens),
Marion M. Farr, and Edward E. Lund. 1962, 58p
Text in French. Sponsored in part Agency for International Development, Washington, DC.

Descriptors: *Chickens, *Poultry, *Diseases, *Parasites, Livestock, Domestic animals, Newcastle disease, Infectious diseases, Viral diseases, Salmonella, Bacteria, Therapy, Signs and symptoms, Preventive medicine, Mites, Ticks, Worms, Lice, Animal husbandry, Veterinary medicine.
Identifiers: Developing country application.

The booklet is a translation of eight English language pamphlets entitled: Newcastle Disease; Salmonella Infections in Poultry; Intestinal Coccidosis of Chickens; Blackhead of Turkeys and Chickens; Poultry Mites; Fowl Tick; Tapeworms of Poultry; Chicken Lice. Each disease or affliction is explained by analyzing its life cycle, mode of transmission, internal and external symptoms, and methods of prevention and cure.

2F. Forestry

E79-10175 PC **A04**/MF **A01**
Purdue Univ., Lafayette, IN. Lab. for Applications of Remote Sensing.
Forest Resource Information System.
Quarterly rept. 1 Jul-30 Sep 78,
R. P. Mroczynski. 30 Sep 78, 54p LARS-CR-093078, NASA-CR-160118
Contract NAS9-15325
Original contains imagery. Original photography may be purchased from the EROS Data Center, Sioux Falls, SD. 57198.

Descriptors: Forests, *Information systems, Data bases, Maps, Cost analysis, Skylab program, EREP, User requirements, Classifications.
Identifiers: *Forestry, Forest Resource Information System.

The author has identified the following significant results. A benchmark classification evaluation framework was implemented. The FRIS preprocessing activities were refined. Potential geobased referencing systems were identified as components of FRIS.

PB-293 292/9GA PC **A03**/MF **A01**
North Central Forest Experiment Station, St. Paul, MN.
Some Harvest Options and Their Consequences for the Aspen, Birch, and Associated Conifer Forest Types of the Lake States.
Forest Service general technical rept. (Final),
L. F. Ohmann, H. O. Batzer, R. R. Buech, D. C. Lothner, and D. A. Perala. Mar 79, 39p* FSGTR-NC-48

Descriptors: *Environmental impacts, *Harvesting, *Forest trees, Birch trees, Pine trees, Fir trees, Ratings, Investments, Esthetics, Water supply, Ground water, Water quality, Wildlife, Plant diseases, Insects, Michigan, Minnesota, Wisconsin.
Identifiers: *Forest management.

Some harvest options and their consequences are given for the aspen, birch, and associated conifer forest types of the Lake States. The report describes some harvest options and their consequences in terms of timber investment return, water yield and quality, wildlife, visual quality, and disease and insect impact for the aspen, white birch, red pine, white pine, jack pine, black spruce, spruce-fir, and white-cedar forest types of the Lake States.

PB-293 333/1GA PC **A02**/MF **A01**
North Central Forest Experiment Station, St. Paul, MN.
Converting Partially-Stocked Aspen Stands to Fully-Stocked Stands in the Lake States: An Economic Analysis.
Forest Service general technical rept. (Final),
Jeffrey T. Olson, and Allen L. Lundgren. Mar 79, 13p FSGTR-NC-47
Prepared in cooperation with Michigan Dept. of Natural Resources, Lansing.

Descriptors: *Harvesting, *Forest trees, Surveys, Investments, Plant growth, Yield, Cost analysis, Tables(Data), Michigan, Minnesota, Wisconsin.
Identifiers: Populus tremuloides, Populus grandidentata, Populus balsamifera.

The 1968 Wisconsin Forest Survey showed large areas of aspen type that are not considered fully stocked. The economic feasibility of converting partially-stocked stands to full stocking is examined, and a rule presented for determining when a partially-stocked stand should be harvested to maximize its present value.

3. ASTRONOMY AND ASTROPHYSICS

3B. Astrophysics

AD-A065 260/2GA PC **A03**/MF **A01**
McMath-Hulbert Observatory, Pontiac, MI.
Solar and Geophysical Associations with the Principal Energetic Particle Events in 1971 and 1972,
H. W. Dodson-Prince, E. R. Hedeman, and O. C. Mohler. 31 Oct 78, 26p SCIENTIFIC-2, AFGL-TR-78-0266
Contract F19628-76-C-0240
See also Rept. no. AFGL-TR-77-0222, AD-A048 479.

Descriptors: *Solar activity, *Solar flares, Geomagnetism, Interactions, Solar cycle, Catalogs.
Identifiers: Solar protons, Solar particles, Polar cap absorption, Magnetic storms.

For 1971 and 1972, 202 distinct, energetic particle enhancements have been identified. Solar and geomagnetic circumstances prior to each of these proton increases have been evaluated. For 93 of the particle enhancements, confident flare or geomagnetic associations could be established. These events included 27 relatively high energy (19-80 or > 60 MeV or PCA) proton enhancements. An additional 17 high energy increases were observed, but assured solar or geomagnetic associations could not be established. Tabulations have been prepared of solar and geomagnetic circumstances prior to all events with assured flare or geomagnetic associations and/or high energy proton detection. The tabulations of this report provide solar and geomagnetic data for approximately 50% of the identified energetic particle events in 1971 and 1972. The remaining events included only those with lower particle energies and the less confident solar or geophysical associations. (Author)

AD-A065 261/0GA PC **A03**/MF **A01**
McMath-Hulbert Observatory, Pontiac, MI.
Study of Geomagnetic Storms and Solar Flares in the Years of Increasing Solar Activity, Cycles 19 and 20 (1955-1957, 1965-1968),
H. W. Dodson-Prince, E. R. Hedeman, and O. C. Mohler. 31 Oct 78, 39p SCIENTIFIC-3, AFGL-TR-78-0267
Contract F19628-76-C-0240

Descriptors: *Solar flares, *Magnetic storms, Interactions, Solar activity, Indexes(Ratios), Catalogs, Intensity, Solar cycle.
Identifiers: Geomagnetic storms.

Solar circumstances prior to the 245 geomagnetic storms with maximum values of 3-hourly K sub p greater than or equal to 5 in the years 1955-1957 and 1965-1968 have been evaluated. The years studied were those of increasing activity in solar cycles 19 and 20. To assist in this study, a Comprehensive Flare Index based on the flare's H-alpha, ionizing, and radio frequency radiation has been used. Of the 245 storms in the seven years studied 62% were considered to be flare-associated, 30% were primarily sequential, and only 8% remained as problem cases. Most of the severe storms were associated with flares. Sequential storms were primarily of moderate severity. The most important flares tended to be associated with the most severe storms. Flare criteria that include ionizing and radio frequency emissions as well as optical data apparently assist in the recognition of flares associated with subsequent geomagnetic storms.

AD-A065 321/2GA PC **A02**/MF **A01**
McMath-Hulbert Observatory, Pontiac, MI.
Energetic Solar Particle and Geomagnetic Storm Study.
Final rept. 1 Aug 76-30 Sep 78,
O. C. Mohler, H. W. Dodson-Prince, and E. R. Hedeman. 31 Oct 78, 10p AFGL-TR-78-0268
Contract F19628-76-C-0240

Descriptors: *Solar flares, *Magnetic storms, Solar activity, Interactions, Energetic properties, Solar cycle, Reports, Abstracts.
Identifiers: Solar particles.

This final report consists of a brief administrative statement describing the purpose and progress of the research, the funding of the research, the personnel who participated in the program, and brief description of the scientific reports prepared under this contract. Three scientific reports have been completed: Survey and Comparison of Solar Activity and Energetic Particle Emission in 1970; Solar and Geophysical Associations with the Principal Energetic Particle Events in 1971 and 1972; and Study of Geomagnetic Storms and Solar Flares in the Years of Increasing Solar Activity in Cycles 19 and 20 (1955-1957; 1965-1968).

AD-A065 366/7GA PC **A05**/MF **A01**
Air Force Inst. of Tech., Wright-Patterson AFB, OH.
Coronal Structure and Prominence Characteristics Relative to Instabilities in the Solar Atmosphere.
Master's thesis,
Joseph Francis Bryson, Jr. 21 Jul 78, 91p Rept no. AFIT-CI-79-751

Descriptors: *Solar atmosphere, Solar flares, Sky brightness, Magnetic fields, Tables(Data), Theses.
Identifiers: *Solar corona *Solar prominences, Solar structure, Solar magnetic fields.

An analysis of Lambda 5303 coronal filtergrams obtained from Sacramento Peak Observatory and an analysis of prominence lifetimes obtained from Fraunhofer Institute Maps and H-alpha patrol film were completed. A statistical survey of the filtergrams shows that the presence of the Lambda 5303 corona on the east limb indicates chromospheric Active Regions (AR's) coming within the earth's field of view. Comparison of the coronal features and chromospheric activity suggests a possible relationship between the definition and heights of the Lambda 5303 coronal structures and flares. Configurations and definition of the coronal magnetic fields inferred from Lambda 5303 and Mount Wilson photospheric magnetograms imply that stressed fields possibly exist in some coronal loop systems associated with the AR's. The sharper definition of some of the loops may be the result of a current-produced azimuthal field around the flux tube which confines the plasma and thus increases the density of the emitting material. A statistical study of prominence lifetimes shows that the ratio of the prominence angle from the local meridian to its length may be related to the lifetime of the prominence before eruption.

INIS-mf-4222 PC **A09**/MF **A01**
Utrecht Rijksuniversiteit (Netherlands).
Dynamics of Coronal Magnetic Structures. A Numerical Analysis of Coronal Magnetic Field Evolution in the Presence of Large Gradients.
W. Weber. 16 Jan 78, 197p
Thesis.
U.S. Sales Only.

Descriptors: *Solar corona, A codes, Magnetic fields, Magnetohydrodynamics, Numerical solution, Plasma pressure, S codes, Shock waves, Solar wind, Star models.
Identifiers: ERDA/640104, Netherlands.

For abstract, see Atomindex citation 09:377664.

LA-7598-MS PC **A02**/MF **A01**
Los Alamos Scientific Lab., NM.
Theoretical Light and Velocity Curves for Cepheid Variables.
T. F. Adams, C. G. Davis, and C. F. Keller. Dec 78, 16p
Contract W-7405-ENG-36

Descriptors: *Cepheids, Computer codes, D codes, Emission spectra, Mass, Nonlinear problems, Velocity.
Identifiers: ERDA/640102.

For abstract, see ERA citation 04:024733.

LBL-7723 PC **A06**/MF **A01**
California Univ., Berkeley. Lawrence Berkeley Lab.
Nuclear and Atomic Physics Governing Changes in the Composition of Relativistic Cosmic Rays.
L. W. Wilson. May 78, 104p
Contract W-7405-ENG-48
Thesis.

Descriptors: *Cosmic radiation, Atom collisions, Chemical composition, Corrections, Cross sections, Electron attachment, Errors, Matrices, Nuclear reactions, Photoionization, Relativistic range, Stripping.
Identifiers: ERDA/640101.

For abstract, see ERA citation 04:024732.

N79-19333/0GA PC **A03**/MF **A01**
Arkansas Univ. at Little Rock. Dept. of Electronics and Instrumentation.
Nephelometer Evaluation for Measurement of Cloud Parameters in Earth and Planetary Atmospheres.
Semiannual Progress Report, Mar. 1978 - Aug. 1978.
G. S. Ballard, and M. K. Testerman. 22 Mar 79, 28p NASA-CR-158156
Contract NGL-04-001-007

Descriptors: *Cloud physics, *Earth atmosphere, *Nephelometers, *Planetary atmospheres, Clouds, Evaluation, Gallium arsenides, Laser applications, Light scattering, Optical measurement.
Identifiers: Semiconductor diodes.

For abstract, see STAR 1710

N79-19962/6GA PC **A02**/MF **A01**
Chicago Univ., IL.
Far Infrared Maps of the Ridge Between OMC-1 and OMC-2.
Final Technical Report.
J. Keene, J. Smith, D. A. Harper, R. H. Hildebrand, and S. E. Whitcomb. Mar 79, 19p NASA-CR-158235
Grant NSG-2261

Descriptors: *Cosmic dust, *Far infrared radiation, Emission, Maps, *Nebulae, Flux density, Graphs(Charts), Heating, Photometry, Resolution, Temperature distribution.
Identifiers: OMC 1 nebula, OMC 2 nebula, Nu Orionis star.

For abstract, see STAR 1710

N79-19963/4GA PC **A03**/MF **A01**
Cornell Univ., Ithaca, NY. Center for Radiophysics and Space Research.
The 16-39 Micrometer Spectroscopy of Oxygen-Rich Stars.
W. J. Forrest, W. J. McCarthy, and J. R. Houck. Feb 79, 40p NASA-CR-158243, CRSR-717
Contract NGR-33-010-182

Descriptors: *Infrared spectroscopy, *Oxygen, *Stellar atmospheres, Dust, Emission spectra, Silicates.
Identifiers: Intermediate infrared radiation, Far infrared radiation, Silicon.

For abstract, see STAR 1710

PB-294 770/3GA PC **A09**/MF **A01**
National Geophysical and Solar-Terrestrial Data Center, Boulder, CO.
Solar-Geophysical Data Number 414 (Supplement), February 1979, Part I (Prompt Reports). Data for January 1979 - December 1978,
Helen E. Coffey. Feb 79, 177p SGD-414-PT-1, NOAA-79031606
See also Number 413, Part 1, PB-292 636, PB-294 771 and PB-294 772.

Descriptors: *Solar activity, Solar flares, Indexes(Ratios), Solar radio emission, Solar x rays, Solar corona, Solar wind, Solar magnetic fields, Magnetic storms, Sudden ionospheric disturbances, Cosmic rays, Geomagnetism, Radio frequencies, Wave propagation.
Identifiers: Pioneer 6 space probe, Pioneer 9 space probe, Pioneer 12 space probe, Interplanetary magnetic fields.

This prompt report provides data for January 1979 on: alert period, daily solar indices, solar flares, solar radio waves, solar x-ray radiation, coronal holes, spacecraft observations, solar wind measurements, inferred IP magnetic field polarities, mean solar magnetic field and Boulder geomagnetic substorm log. It also provides data for December 1978 on: daily solar activity center, sudden ionospheric disturbances, solar x-ray radiation, solar radio waves, cosmic rays, geomagnetic indices and radio propagation indices.

PB-294 771/1GA PC **A04**/MF **A01**
National Geophysical and Solar-Terrestrial Data Center, Boulder, CO.
Solar-Geopysical Data Number 414 (Supplement), February 1979, Part II (Comprehensive Reports). Data for August 1978 - July 1978 and Miscellanea,
Helen B. Coffey. Feb 79, 70p SGD-414-PT-2, NOAA-79031607
See also Number 413, Part 2, PB-292 637, PB-294 770 and PB-294 772.

Descriptors: *Solar activity, Solar flares, Solar radio emission, Solar cosmic rays, Solar wind, Cosmic rays, Magnetic storms, Tables(Data), Graphs(Charts), Maps.
Identifiers: Solar particles.

This comprehensive report provides data for August 1978 on: active regions, synoptic solar maps, solar flares, solar radio waves and energetic solar particles and plasma. It also provides a synoptic chart, abbreviated calendar record, and regional flare index for July 1978. The miscellaneous data includes: solar wind measurements, solar radio waves, cosmic rays--alert and Deep River November 1978, and solar-terrestrial activity 1976.

PB-294 772/9GA PC **A05**/MF **A01**
National Geophysical and Solar-Terrestrial Data Center, Boulder, CO.
Solar-Geophysical Data Number 414 (Supplement), February 1979. Explantion of Data Reports.
Feb 79, 92p SGD-414, NOAA-79031608
See also PB-294 770 and PB-294 771.

Descriptors: *Solar activity, Indexes(Ratios), Solar flares, Solar radio emission, Solar wind, Solar magnetic fields, Interplanetary medium, Electric fields, Geomagnetism, Sudden ionospheric disturbances, Cosmic rays, Radio frequencies, Wave propagation, Magnetic storms.
Identifiers: Solar protons, Interplanetary magnetic fields, Solar particles.

This supplement contains the description and explanation of the data in the monthly publication, Solar-Geophysical Data, compiled by the National Geophysical and Solar-Terrestrial Data Center (NGSDC) in Boulder, Colorado, U.S.A. Solar-Geophysical Data is intended to keep research workers informed on a timely schedule of the major events of solar activity and the associated interplanetary, ionospheric, radio propagation and other geophysical effects. This report series is made possible through the cooperation of many observatories, laboratories, and agencies as recorded in the detailed descriptions that follow.

UCRL-81758 PC **A06**/MF **A01**
California Univ., Livermore. Lawrence Livermore Lab.
Star Formation.
P. R. Woodward. 27 Sep 78, 101p CONF-7806119-1
Contract W-7405-ENG-48
International school of physics, Varenna, Lake Como, Italy, 26 Jun 1978.

Descriptors: *Cosmic gases, *Star evolution, Explosions, Galaxies, Gravitational collapse, Rotation, Shock waves, Spiral configuration, Star models, Supernovae.
Identifiers: ERDA/640102, ERDA/640105.

For abstract, see ERA citation 04:024735.

WIS-Ph-77/50 PC **A02**/MF **A01**
Weizmann Inst. of Science, Rehovoth (Israel). Dept. of Nuclear Physics.
Model for Superliminal Radio Sources.
M. Milgrom, and J. N. Bahcall. 1977, 9p
U.S. Sales Only.

Descriptors: *Cosmic radio sources, *Quasars, *Radio galaxies, Cosmic radiation, Cosmological models, Hubble effect, Mathematical models, Red shift, Star models, Stellar radiation, Velocity.
Identifiers: ERDA/640103, Israel.

For abstract, see Atomindex citation 09:413147.

WIS-Ph-77/51 PC **A02**/MF **A01**
Weizmann Inst. of Science, Rehovoth (Israel). Dept. of Nuclear Physics.
Parameters Estimation for X-Ray Sources: Positions.
Y. Avni. 1977, 9p
U.S. Sales Only.

Descriptors: *Cosmic x-ray sources, Coordinates, Cosmic radiation, Statistics, X radiation.
Identifiers: ERDA/640103, Israel.

For abstract, see Atomindex citation 09:413086.

WIS-Ph-77/52 PC **A02**/MF **A01**
Weizmann Inst. of Science, Rehovoth (Israel). Dept. of Nuclear Physics.
Contribution of Active Galactic Nuclei to the Diffuse X-Ray Background.
Y. Avni. 1977, 15p
U.S. Sales Only.

Descriptors: *Background radiation, Cosmic radiation, Cosmology, Galactic evolution, Kev range 01-10, Nuclei, Quasars, Seyfert galaxies, X radiation, X-ray galaxies.
Identifiers: ERDA/640101, Israel.

For abstract, see Atomindex citation 09:413085.

WIS-Ph-78/2 PC **A02**/MF **A01**
Weizmann Inst. of Science, Rehovoth (Israel). Dept. of Nuclear Physics.
Anomalous Periastron Positions in X-Ray Binaries.
M. Milgrom. 1978, 22p
U.S. Sales Only.

Descriptors: *Binary stars, *Cosmic x-ray sources, Coordinates, Neutron stars, Orbits, Star clusters, Star evolution, Stellar winds, Velocity, X radiation.
Identifiers: ERDA/640102, Netherlands.

For abstract, see Atomindex citation 09:413146.

WIS-PH-77/57 PC **A04**/MF **A01**
Weizmann Inst. of Science, Rehovoth (Israel). Dept. of Nuclear Physics.
Masses of Neutron Stars and Black Holes in X-Ray Binaries.
J. N. Bahcall. 1977, 61p
U.S. Sales Only.

Descriptors: *Binary stars, *Neutron stars, Black holes, Cosmic radiation, Cosmic ray sources, Geometry, Mass, X radiation.
Identifiers: ERDA/640103, Israel.

For abstract, see Atomindex citation 09:413089.

4. ATMOSPHERIC SCIENCES

4A. Atmospheric Physics

AD-A064 893/1GA PC **A02**/MF **A01**
Texas Univ. at Dallas, Richardson.
A Case Study of the Aurora, High-Latitude Ionosphere, and Particle Precipitation during Near-Steady State Conditions,
J. D. Winningham, C. D. Anger, G. G. Shepherd, E. J. Weber, and R. A. Wagner. 2 Sep 77, 17p AFGL-TR-79-0038
Contract F19628-76-C-0005, Grant NGR-44-004-150
A Sponsored in part by Grant, NGL-44-004-130.
Availability: Pub. in the Jnl. of Geophysical Research, v83 nA12 p5717-5731, 1 Dec 78.

Descriptors: *Ionospheric disturbances, *Aurorae, Storms, Particle flux, Meteorological satellites, Reprints.
Identifiers: *Charged particle precipitation, Ionosphere.

No abstract available.

AD-A064 905/3GA PC **A03**/MF **A01**
Oregon Graduate Center, Beaverton.
Concorde Air Sampling Program. Intercalibrations and Collaborative Measurements.
Final rept. Apr-Sep 78,
R. A. Rasmussen. 26 Sep 78, 31p FAA-AEE-78-25
Contract W1-78-3745-1

Descriptors: *Air entrainment, *Sampling, Samplers, Atmospheric chemistry, Supersonic transports, Trace gases, Stratosphere, Collecting methods, Comparison, *Air pollution.
Identifiers: *Air sampling program, Concorde aircraft, *Air pollution sampling, Aerial surveys.

Joint analyses of air samples similar to the operational type of samples obtained on Concorde flights were accomplished at A.E.R.E. Harwell in July 1976 between the Oregon Graduate Center and the Division of Environmental and Medical Sciences, Harwell. The studies were preliminary to directly comparing the data previously obtained by the contractor on the same species during an extensive series of high altitude flights made in 1975-1977. The interlaboratory calibrations and comparisons were successful. A second round of sample exchanges are in progress. Separately the joint studies measured for the first time the concentration of CF4 in the ambient atmosphere as well as the related trace gases COS and CS2 in several samples of volcanic emissions. The report includes a discussion of the Concorde program as to air sampling capabilities, operation, sampling schedule and the uniqueness of related opportunities of the Concorde Air Sampling Program. (Author)

AD-A065 026/7GA PC **A02**/MF **A01**
Federal Aviation Administration, Washington, DC. Office of Environment and Energy.
Meeting of the High Altitude Pollution Program Scientific Advisory Committee. (1st). Executive Summary.
Dec 78, 23p Rept no. FAA-AEE-78-31

Descriptors: *Air pollution, *Aircraft exhaust, Atmospheric chemistry, Atmospheric physics, High altitude, Environmental protection, Advisory activities, Ozone, Upper atmosphere, Nitrogen oxides, Aircraft industry.
Identifiers: *Meetings.

This is the Executive Summary of the first meeting of the High Altitude Pollution Program Scientific Advisory Committee which met in Washington, D.C. from November 29-December 1, 1978. The Committee is composed of 25 members who are experts in a number of fields related to atmospheric chemistry and physics, aviation, and engineering.

AD-A065 155/4GA PC **A04**/MF **A01**
Environmental Research and Technology, Inc., Concord, MA.
Microwave-Infrared Retrievals.
Final rept. 1 Nov 75-30 Apr 77,
H. K. Burke, R. K. Crane, M. G. Fowler, and R. D. Rosen. Apr 78, 73p AFGL-TR-79-0019
Contract F19628-76-C-0135

Descriptors: *Electromagnetic scattering, *Radiative transfer, Radiometry, Atmospheric temperature, Scientific satellites, *Infrared radiation, Atmospheric windows, Cirrus clouds, Snow cover, Algorithms, Iterations.
Identifiers: *Microwave, Multiple scattering, Infrared radiometry, Temperature profiles, Clouds(Meteorology), Rain, Remote sensing, Passive detection, Radiance.

A fast efficient solution to the plane-parallel scattering atmosphere radiative transfer problem was developed for use in simulating the effects of clouds and rain on infrared and microwave passive remote sensing systems. The solution was based upon the use of a variational-iterative procedure. Application of the variational-iterative procedure to simulating the effects of low stratus and thin cirrus clouds revealed that for the window channel (channel 7) of the DMSP infrared sensor system, mutliple scattering computations are required to adequately estimate the radiance for both types of clouds. In addition, multiple scattering calculations are required to properly estimate the radiance values for channels 5 and 6 for thin cirrus clouds. (Author)

AD-A065 259/4GA PC **A03**/MF **A01**
PhotoMetrics, Inc., Lexington, MA.
Densitometric Analyses to Determine Artificial Cloud Expansion Characteristics.
Final rept. 15 Feb 75-14 Feb 78,
Christian A. Trowbridge. 15 Mar 78, 26p PHM-05-78, AFGL-TR-78-0075
Contract F19628-75-C-0126

Descriptors: *Condensation trails, *Turbulent diffusion, Atmosphere models, Heating, Atmospheric condensation, Photographic analysis, Data reduction, Densitometers, Tracer studies, Chemical analysis, Upper atmosphere, Fourier analysis.
Identifiers: Richardson number, Stratosphere, Statistical analysis, Wind(Meteorology).

A program of microdensiometric reduction and computer analysis of photographic images of smoke and chemical tracers in the stratosphere and upper atmosphere is described. Turbulent heating rates, diffusion coefficients and other parameters of turbulence were determined by Fourier and statistical analysis of digitally recorded optical density distributions. Wind data derived by the smoke trail method in the stratosphere and mesosphere was also analyzed to determine Richardson numbers and values of heating and turbulent diffusivity. Investigation of the introduction of vertical velocities into AFGL model atmosphere codes was undertaken and turbulent diffusion coefficients were made available for input to these codes. (Author)

AD-A065 293/3GA PC **A02**/MF **A01**
Lowell Univ. Research Foundation, MA.
Electron Transport in an Inhomogeneous Medium Representative of the Terrestrial Upper Atmosphere.
Final rept. 1 Feb-31 Oct 78,
Madhoo Kanal. Nov 78, 16p ULRF-395/CAR, AFGL-TR-78-0283
Contract F19628-78-C-0074

Descriptors: *Electron transport, *Ionosphere, Upper atmosphere, Electron scattering, Heterogeneity, High latitudes, Anisotropy, Variational principles, Photoelectrons, Excitation, Relaxation, Reports.
Identifiers: Inhomogenous plasma.

This treatment of the electron transport in an inhomogeneous medium accounts for the pitch-angle scattering of hyperthermal electrons by neutral species and the ambient plasma. Also included is the effect of inhomogeneous character of the upper atmosphere on the relaxation length which becomes crucially important in the high magnetic latitudes. For dealing with the inhomogeneity of the atmosphere a maximum variational principle has been deployed which is discussed elsewhere. (Author)

AD-A065 396/4GA PC **A02**/MF **A01**
Regis Coll. Research Center, Weston, MA.
Polar Cap Electric Field Structures with a Northward Interplanetary Magnetic Field.
Scientific rept. 1 Apr-30 Dec 78,
W. J. Burke, M. C. Kelley, R. C. Sagalyn, M. Smiddy, and S. T. Lai. 31 Jul 79, 6p SCIENTIFIC-3, AFGL-TR-79-0049
Contract F19628-77-C-0122
Prepared in cooperation with Cornell Univ., Ithaca, NY. Dept. of Electrical Engineering and Logicon, Inc., Bedford, MA, under Contract F19628-76-C-0304.
Availability: Pub. in Geophysical Research Letters, v6 n1 p21-24 Jan 79.

Descriptors: *Aurorae, Geomagnetism, High latitudes, Electric fields, Data acquisition, Scientific satellites, Ionosphere, Reprints.
Identifiers: Polar regions, S3-2 satellite, Interplanetrary magnetic fields.

No abstract available.

AD-A065 424/4GA PC **A02**/MF **A01**
Air Force Geophysics Lab., Hanscom AFB, MA.
Geometrical Considerations of 136 MHz Amplitude Scintillation in the Auroral Oval,
I. S. Mikkelsen, J. Aarons, and E. Martin. 2 Mar 77, 6p Rept no. AFGL-TR-79-0050
Availability: Pub. in Jnl. of Atmospheric and Terrestrial Physics, v40 p479-483 1978.

Descriptors: *Aurorae, *Ionospheric scintillations, Variations, Electron density, Reprints.
Identifiers: Nimbus 4 satellite.

No abstract available.

AD-A065 471/5GA PC **A04**/MF **A01**
Utah Univ., Salt Lake City. Dept. of Meteorology.
Parameterization of the Solar and Infrared Radiative Properties of Clouds.
Master's thesis,
Gerard Donald Wittman. Dec 78, 71p AFIT-CI-79-93T
Grant NSF-ATM76-17352

Descriptors: *Clouds, *Solar radiation, *Infrared radiation, *Radiative transfer, Reflectivity, Absorption, Emissivity, Transmissivity, Computerized simulation, Water vapor, Ice, Water, High altitude, Low altitude, Atmosphere models, Global, Cirrus clouds, Stratus clouds, Albedo, Upwelling, Parametric analysis, Heat balance, Theses.
Identifiers: Cloud physics, Optical properties.

Reflection, transmission and absorption of solar radiation by 4 cloud types (low, middle, high and stratus clouds) are computed as functions of the solar zenith angle and cloud liquid water/ice content; and reflection, transmission and emission of infrared radiation by cirrus clouds are calculated as functions of cloud ice content. The plane-parallel radiative transfer program employed is based on the discrete-ordinate method with applications to inhomogeneous atmospheres covering the entire solar and infrared spectrums and taking into account the gaseous absorption in scattering atmospheres. Effects of surface reflectivity on the solar radiative properties of clouds are parameterized in terms of the water vapor absorptivity below the cloud, ground reflection and average cloud reflection. The parameterized empirical-theoretical functions for the solar and infrared radiative properties of clouds are used in a global radiation budget model. The resulting radiation balance of the earth-atmosphere system matched satellite observations of planetary albedo, absorption of solar radiation, and upwelling infrared radiation more closely than did earlier computed models. The planetary albedo was calculated to be 0.31.

AD-A065 472/3GA PC **A08**/MF **A01**
Institute for Defense Analyses, Arlington, VA.
Status of Representative Two-Dimensional Models of the Stratosphere and Troposphere as of Mid-1978.
Interim rept. 15 Apr 77-15 Oct 78,
Henry Hidalgo. Oct 78, 164p P-1341, FAA-AEE-78-23
Contract DOT-FA-77WA-3965

Descriptors: *Atmospheric chemistry, *Stratosphere, *Troposphere, *Ozone, Atmosphere models, Photochemical reactions, Reaction kinetics, Atmospheric motion, Mass transfer, Two dimensional, Altitude, Latitude, Summer, Nitrogen oxides, Hydroxyl radicals, Carbon monoxide, *Air pollution, Jet engine exhaust, Subsonic flight, Supersonic flight.
Identifiers: Mathematical models.

This paper reviews ongoing efforts aimed at solution of basic problems dealing with ozone chemistry and atmospheric mass transports in representative two-dimensional (altitude and latitude) photochemical models of the troposphere and stratosphere. Emphasis is placed on the impact of recent measurements of the reaction rate coefficients for HO2 + NO yields OH + NO2 and HO2 + 03 yields OH + 2 02 on: (a) the balance between ozone production and destruction on both ozone concentrations and columns at middle northern latitudes during summer for an oxygen-hydrogen-nitrogen atmosphere; (b) calculation of NO sub x concentrations in the upper troposphere which are important for the effects of high-altitude subsonic flight on the ozone column; and (c) estimates of the tropospheric NO sub x and OH concentrations as well as the removal rates of water-soluble species in the lower troposphere from considerations of the tropospheric ozone and carbon monoxide budgets. The severe limitations of arbitrary extensions of available 2-D parameterizations of the dynamics to an upper troposphere and lower stratosphere assumed to be perturbed by large emissions of engine effluents are brought out from numerical solutions of the primitive equations for instantaneous and continuous sources of inert material in the lower stratosphere. The paper includes preliminary 2-D results based on the revised ozone chemistry for the trend of subsonic and supersonic flight effects ozone.

AD-A065 490/5GA PC **A09**/MF **A01**
Air Force Inst. of Tech., Wright-Patterson AFB, OH.
The Dependence of the Circulation of the Thermosphere on Solar Activity.
Doctoral thesis,
Richard Robert Babcock, Jr. Sep 78, 192p Rept no. AFIT-CI-79-78D

+escriptors: Atmospheric motion, *Thermosphere, *Solar activity, Energy transfer, Solar radiation, Correlation techniques, Atmosphere models, Thermal properties, Transport properties, Aurorae, Wind velocity, Diurnal variations, Solar cycle, Electric fields, Theses.
Identifiers: Atmospheric circulation, Seasonal variations.

Incoherent scatter radar measurements of the ionospheric electron density, electron and ion temperature, and vertical ion drift made at the Millstone Hill Observatory were used to derive the neutral temperature and a measure of the neutral winds in the mid-thermosphere. Over the six year period 1970, near solar maximum, through 1975, at solar minimum, 83 days of diurnally averaged winds were examined to determine if there was a change in the seasonal variation in the circulation as solar activity decreased. It was found that the magnitude of the seasonal variation in both the zonal and meridional winds remains about the same, although the winter averaged winds become more poleward near solar minimum consistent with the model of Roble et al (1977). For several geomagnetically disturbed days examined, it was found that the diurnal wind pattern was significantly different from quiet days. The nighttime meridional winds were markedly stronger equatorward and the zonal winds tended to be more westward. In the analysis procedures, it was demonstrated that frictional heating by the neutrals is an important factor in deriving the neutral temperature from the ion heat balance equation. It was also shown that electric field effects are important in the derivation of winds during disturbed periods.

N79-19477/5GA PC **A04**/MF **A01**
Old Dominion Univ. Research Foundation, Norfolk, VA. Dept. Physics.
The Investigation of Advanced Remote Sensing Techniques for the Measurement of Aerosol Characteristics.
Final Report, Sep. 1975 - Dec. 1977.
A. Deepak, and J. Becher. Mar 79, 68p NASA-CR-158171, PTR-79-3
Grant NSG-1252

Descriptors: *Aerosols, Chemical properties, Remote sensors, Atmospheric models, Computer programs, Stratosphere, Troposphere.
Identifiers: Remote sensing.

For abstract, see STAR 1710

PATENT-4 138 660 Not available NTIS
Department of the Navy Washington DC
Automated Flash-Bang Method and Apparatus for Determining Lightning Stroke Distances.
Patent,
Robert D. Hill. Filed 14 Sep 77, patented 6 Feb 79, 7p AD-D005 815/6, PAT-APPL-833 325
Supersedes PAT-APPL-833 325-77, AD-D004 382.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $0.50.

Descriptors: *Patents, *Lightning, *Range(Distance), *Measuring instruments, Microphones, Flashes, Light pulses, Detectors, Military facilities, Acoustic detection, Computer applications, Azimuth, Computations.
Identifiers: PAT-CL-340-16.

Four microphones are disposed, one at each corner of a square of rectangular configuration located near a base station from which the lightning distance is to be measured. A light detector also is located near the base station. When lightning occurs, the light and sound waves are detected and passed in pulse form over separate channels to a computer. The time intervals between lightning and sound in each channel are measured, stored and used to calculate the slant range distance of each microphone from the lightning event. Using the slant range distance values and the known spacing values of the rectangular configuration, a computer provides the desired distance value which, for present purposes, is the horizontal distance of the closet microphone to a ground point perpendicularly beneath the lightning event. The azimuth of the ground point from the closet microphone can be determined by a simple calculation using the ground point distance value. (Author)

PB-293 119/4GA PC **A10**/MF **A01**
Systems Applications, Inc., San Rafael, CA.
The Development of Mathematical Models for the Prediction of Anthropogenic Visibility Impairment. Volume I.
Final rept. Oct 77-Sep 78,
Douglas A. Latimer, Robert W. Bergstrom, Stanley R. Hayes, Mei-Kao Liu, and John H. Seinfeld. Sep 78, 210p EF78-68A, EPA/450/3-78/110A
Contracts EPA-68-01-3947, EPA-68-02-2593
See also Volume 2, PB-293 120.
Also available in set of 3 reports PC E13, PB-293 118-SET.

Descriptors: *Air pollution, *Mathematical models, *Visibility, Plumes, Atmospheric chemistry, Concentration(Composition), Regulations, Sources, Transport properties, Aerosols, Color, Forecasting.
Identifiers: *Air quality, *Air pollution models, Atmospheric transmissivity, Gaussian plume models.

This report describes a nine-month study to recommend and develop models that predict the contribution of man-made air pollution to visibility impairment in federal Class I areas. Two models were developed. A near-source plume model based on a Gaussian formulation was designed to compute the impact of a plume on visual range and atmospheric coloration. A regional model was designed to calculate pollutant concentrations and visibility impairment resulting from emissions from multiple sources within a region with a spatial scale of 1000 km and a temporal scale of several days. The objective of this effort was to develop models that are useful predictive tools for making policy and regulatory decisions, for evaluating the impacts of proposed new sources, and for determining the amount of emissions reduction required from existing sources, as mandated by the Clean Air Act Amendments of 1977. Volume I of this report contains the main text.

PB-293 120/2GA PC **A22**/MF **A01**
Systems Applications, Inc., San Rafael, CA.
The Development of Mathematical Models for the Prediction of Anthropogenic Visibility Impairment. Volume II: Appendices.
Final rept. Oct 77-Sep 78,
Douglas A. Latimer, Robert W. Bergstrom, Stanley R. Hayes, Mei-Kao Liu, and John H. Seinfeld. Sep 78, 519p EF78-68B, EPA/450/3-78/110B
Contracts EPA-68-01-3947, EPA-68-02-2593
See also Volume 1, PB-293 119 and Volume 3, PB-293 121.

Also available in set of 3 reports PC E13, PB-293 118-SET.

Descriptors: *Air pollution, *Mathematical models, *Visibility, Atmospheric motion, Trends, Diurnal variations, Sulfates, Plumes.
Identifiers: *Air quality, *Air pollution models, Atmospheric transmissivity, Great Plains Region(United States), Southwest Region(United States).

This report describes a nine-month study to recommend and develop models that predict the contribution of man-made air pollution to visibility impairment in federal Class I areas. Volume II contains the appendices. The topics are the following: Analysis of visual range in the Northern Great Plains and the Southwest; Atmospheric optics calculation; The chemistry of sulfate formation; Description of the plume visibility model; Plume model sample output; Description of the Northern Great Plains regional model; Application of the regional model to the prediction of visibility impairment in the Northern Great Plains.

PB-293 121/0GA PC **A05**/MF **A01**
Systems Applications, Inc., San Rafael, CA.
The Development of Mathematical Models for the Prediction of Anthropogenic Visibility Impairment. Volume III: Case Studies for Selected Scenarios.
Final rept. Oct 77-Sep 78,
Douglas A. Latimer, Robert W. Bergstrom, Stanley R. Hayes, Mei-Kao Liu, and John H. Seinfeld. Sep 78, 98p EF78-68C, EPA/450/3-78/110C
Contracts EPA-68-01-3947, EPA-68-02-2593
See also Volume 2, PB-293 120.
Also available in set of 3 reports PC E13, PB-293 118-SET.

Descriptors: *Air pollution, *Mathematical models, *Visibility, *Electric power plants, Plumes, Sulfates, Reaction kinetics, Ozone, Concentration(Composition), Sulfur dioxide, Nitrogen dioxide, Atmospheric chemistry.
Identifiers: *Air quality, *Air pollution models.

This report describes a nine-month study to recommend and develop models that predict the contribution of man-made air pollution to visibility impairment in federal Class I areas. Volume III presents case studies of power plant plume visual impact for a variety of emission, meteorological, and ambient background scenarios.

PB-293 485/9GA PC **A04**/MF **A01**
Environmental Sciences Research Lab., Research Triangle Park, NC.
Association Between Meteorological Conditions and High Ozone and Sulfate Concentrations: A 1974 Episode in the Eastern United States.
Rept. for Feb-Oct 78,
Gerard A. DeMarrais. Feb 79, 75p EPA/600/4-79/009

Descriptors: *Air pollution, *Ozone, *Sulfates, Concentration(Composition), Atmospheric motion, Transport properties, Chemical reactions, Diurnal variations, Sources, Atmospheric temperature, Visibility.

A 1,000,000 sq km area of the Eastern United States had sulfate concentrations exceeding 10 microgram/cu m on July 10, 1974, and there were indications that parts of the area had high concentrations on prior days. The meteorology associated with the high concentrations and correlations of high ozone and sulfate concentrations are discussed. It appeared that slow moving and subsiding air contributed to the high concentrations of both pollutants. Long range transport, as shown by trajectory analyses, was a factor in the problems in most areas, but the worst situations with regards to sulfates were associated with emissions from nearby, upwind sources. While high ozone concentrations were observed immediately prior to high sulfate concentrations in many areas, there were high sulfate concentrations that were not associated with high ozone concentrations. In the latter situation, the high sulfate concentrations were associated with air which had earlier movement over areas with high SO2 emission.

4B. Meteorology

AD-A064 862/6GA PC **A07**/MF **A01**
Naval Postgraduate School, Monterey, CA.
A Synoptic Study of the Northeastern Monsoon over the South China Sea and its Vicinity during December 1974.
Master's thesis,
John Erick Erickson. Dec 78, 143p

Descriptors: *Monsoons, Synoptic meteorology, *South China Sea, Wind, *Air water interactions, Marine meteorology, Rain, Weather, Weather stations, Meteorological satellites, Climate, Theses.
Identifiers: Storm surges, Equatorial regions, Tropical regions, Cooling, Borneo, Vietnam, Coasts, Cumulus clouds, Convection.

Through the study and evaluation of cold surges in the northeast monsoon, insight is gained into the relationship of the surges with large-scale mid-latitude and tropical systems, their horizontal and vertical structure, their equatorial penetration, and their effects on other phenomena. The results lead to the tentative conclusions that due to the varying degree of air-sea interactions between cold air originating from the South China coast, the near-equatorial latitudes of the South China Sea will experience a freshening of the low-level northeasterly monsoon winds prior to a decrease in surface temperature which, if it occurs, is confined to the western portion of the South China Sea. This allows a near-equatorial disturbance (which may originate from the semi-stationary near-equatorial trough over the coast of northern Borneo or from a westward propagating wave in the western Pacific) to be intensified at an early stage of the surge by enhanced low-level convergence and organized deep cumulus convection. Afterwards it may be weakened by either cold incursion along the Vietnam coast or a slackening of the northeasterlies. (Author)

AD-A064 884/0GA PC **A03**/MF **A01**
Naval Postgraduate School, Monterey, CA.
A Transfer Function Analysis of Numerical Schemes Used to Simulate Geostrophic Adjustment.
Final rept. Jan-Oct 78,
Arthur L. Schoenstadt. Nov 78, 48p Rept no. NPS-53-79-001

Descriptors: *Weather forecasting, *Geostrophic wind, Numerical methods and procedures, Computer applications, Finite difference theory, Finite element analysis, Fourier analysis, Perturbations, Transfer functions.
Identifiers: Numerical weather forecasting.

Traditional analysis of finite difference and finite element schemes used in numerical weather prediction has concentrated almost exclusively on an analysis of the accuracy with which the scheme simulates the phase speeds involved. In this paper, we use the transfer function formulation common in design of electrical filters to show that these numerical schemes also have important amplitude distortion characteristics, which must be considered in any complete analysis. (Author)

AD-A064 903/8GA PC **A03**/MF **A01**
Naval Postgraduate School, Monterey, CA.
1978 Marine Boundary Layer Study (MABLES-WC).
Initial data rept.,
G. E. Schacher, E. Garner, T. Usher, C. W. Fairall, and K. L. Davidson. 16 Dec 78, 35p Rept no. NPS-61-79-003
See also Rept. no. NPS61-78-001.

Descriptors: *Marine atmospheres, Boundary layer, Marine meteorology, Meteorological data, Summer, California, Coastal regions, North Pacific Ocean, Sea water, Ocean surface, Surface temperature, Atmospheric temperature, Wind, Visibility, Temperature inversion, Air pollution.
Identifiers: MABLES-WC(Marine Atmosphere Boundary Layer Experiments-West Coast).

During August of 1978 meteorological data was collected at sea off the central coast of California. This report describes the plan of the ships operations and the type of measurements made. The data obtained has been corrected for instrument calibration and is also presented. (Author)

AD-A064 972/3GA PC **A06**/MF **A01**
SRI International, Menlo Park, CA.
Tracking and Monitoring Hurricanes by HF Skywave Radar Over the Gulf of Mexico.
Final rept. 14 Jul 76-30 Nov 78,
Joseph W. Maresca, Jr., and Christopher T. Carlson. Nov 78, 111p AFOSR-TR-79-0042
Contract F49620-76-C-0023

Descriptors: *Hurricane tracking, *Radar tracking, *Sky waves, Radar beams, High frequency, High resolution, Meteorological radar, Wind velocity, Ocean waves, Height, Wind direction, Ocean surface, Spatial distribution, Accuracy, *Hurricanes, Over the horizon detection, Monitoring, Marine meteorology, Pacific Ocean, Mexico Gulf.
Identifiers: Wide Aperture Research Facility, Hurricane Anita.

This report describes the results of a study to evaluate the effectiveness of a high-frequency (HF) skywave radar used to determine (1) the track of a hurricane, and (2) hurricane wind velocity and wave height throughout all regions of a storm. Experimental data were collected using the SRI-operated Wide Aperture Research Facility (WARF) located in central California. The WARF radar is a high-resolution skywave radar capable of forming a 0.5 deg beam at 15 MHz. HF skywave radar sea-echo Doppler spectra were recorded for six hurricanes/tropical storms in the Gulf of Mexico and Pacific Ocean between 1975 and 1978. Both day and night measurements were made, as well as one- and two-ionospheric-hop measurements ranging out from 2800 to 4000 km. Surface wind direction maps were computed for all 6 tropical storms. In situ measurements were available for two storms for comparison to the WARF radar wind maps. The radar-derived wind directions coincident in time and space with National Data Buoy Office moored buoys showed agreement to within 10 deg. The center of the hurricane was estimated from each WARF wind map and was compared to the official track compiled by the National Hurricane Center (NHC). The mean difference between the WARF radar positions and the interpolated positions along the NHC track was 19 km for Hurricane Anita 1977.

AD-A065 061/4GA PC **A03**/MF **A01**
Air Force Geophysics Lab., Hanscom AFB, MA.
A Report on Experiments with the AFGWC Boundary Layer Model.
Interim rept.,
Chien-Hsiung Yang, and Karekin Agazarian. 2 Oct 78, 36p Rept nos. AFGL-TR-78-0239, AFGL-AFSG-397

Descriptors: *Weather forecasting, *Atmosphere models, Boundary layer, Accuracy, Efficiency, Numerical methods and procedures, Mathematical models, Diffusivity.
Identifiers: *Atmospheric boundary layer, Eddies, Humidity.

Experiments were carried out to find means of improving the forecast performance of the Air Force Global Weather Central (AFGWC) Boundary Layer Model. The results suggest that modifications in the methods of estimating eddy diffusivity and surface specific humidity may yield a slight improvement in the forecast accuracy while requiring less computation. It is also demonstrated that doubling the time step from 30 to 60 min does not significantly degrade the forecast accuracy. Suggestions on further modifications under less restrictive operational conditions are also included. (Author)

AD-A065 117/4GA PC **A02**/MF **A01**
Air Force Geophysics Lab., Hanscom AFB, MA.
An Efficient Barotropic Vorticity Equation Model on a Sphere.
Environmental research papers,
Samuel Y. K. Yee. 13 Nov 78, 22p Rept nos. AFGL-TR-78-0273, AFGL-ERP-645

Descriptors: *Weather forecasting, Mathematical models, Numerical analysis, Computer programs, Global, Finite difference theory, Fourier analysis.

Identifiers: *Barotropic models, Synoptic meteorology, Planetary waves, Atmospheric models, Barotropic flow.

An efficient accurate algorithm for a barotropic model for a computational domain that encompasses the entire surface of the earth has been developed. While this simple model does not contain enough realistic features of the atmosphere to predict the synoptic-scale weather with accuracy, it does, however, simulate the planetary waves of the atmosphere with sufficient realism to enable us to conduct numerical experiments designed to study specific problems in numerical weather prediction. This interim report, gives a brief discussion of the motivations for developing such a global barotropic model, describes in some detail the numerics for the solution of the model equations, and presents some sample numerical time-integration results. Several remarks concerning the numerics of this algorithm are included. (Author)

AD-A065 127/3GA MF **A01**
University of Manchester Inst. of Science and Technology (England). Dept. of Physics.
Visibility within and Electromagnetic Transmission through Natural Clouds and Fogs,
John Latham. Jan 79, 25p SCIENTIFIC-1, AFGL-TR-79-0032
Grant AFOSR-78-3511
Availability: Microfiche copis only.

Descriptors: *Fog, *Clouds, Visibility, Experimental data, Aerosols, Turbulence, Atmosphere models, Great Britain.
Identifiers: *Cloud physics, Electromagnetic wave transmission.

A substantial amount of field data obtained in recent cloud and fog experiments conducted at Great Dun Fell (GDF) is currently under analysis, and will be reported subsequently. In this report we concentrate on two activities falling within the scope of grant AFOSR-78-3511A. The first is an analysis of the meteorology and water characteristics of some clouds and fogs enveloping the GDF laboratory, which were examined by the UMIST groups, in collaboration with scientist from the Meteorological Office. The second is the development of a theoretical model of droplet evolution in fogs and clouds under the influence of inhomogeneous turbulent mixing undersaturated environmental air. This theoretical work has been performed in conjunction with Dr. M. B. Baker of the University of Washington, Seattle. Some complementary laboratory investigations currently being performed at UMIST will be reported at a later date. (Author)

AD-A065 167/9GA PC **A04**/MF **A01**
Air Force Geophysics Lab., Hanscom AFB, MA.
Atlas of Cloud-Free Line-of-Sight Probabilities. Part 4. Europe.
Air Force surveys in geophysics,
Iver A. Lund, Donald D. Grantham, and Clarence B. Elam, Jr. 13 Nov 78, 71p Rept nos. AFGL-TR-78-0276, AFSG-400
See also Part 3, AD-A051 112.

Descriptors: *Meteorological data, *Clouds, *Visibility, Optical equipment, Climate, Weather stations, Probability, Europe, Tables(Data), Statistics.
Identifiers: *Cloud free line of sight, Atlases, Northern hemisphere.

This is the fourth part of a planned Northern Hemisphere atlas of probabilities of cloud-free lines-of-sight between the earth and space. The probabilities are for the mid-season months: January, April, July, and October; four times of day: 0000-0200 LST, 0600-0800 LST, 1200-1400 LST, and 1800-2000 LST; and three elevation angles: 10 deg, 30 deg, and 90 deg. Parts 1, 2, and 3 depicted cloud-free line-of-sight probabilities for Germany, the USSR, and the USR, respectively. (Author)

AD-A065 250/3GA PC **A02**/MF **A01**
Oregon State Univ., Corvallis. Dept. of Atmospheric Sciences.
On the Escarpment Wind Profile,
Niels Otto Jensen, and Ernest W. Peterson. 16 May 77, 10p ARO-14440.6-GS
Grant DAAG29-77-G-0043
Availability: Pub. in the Quarterly Jnl. of the Royal Meteorological Society, v104 n441 p719-728 1978.

Descriptors: *Meteorological data, *Wind, Air flow, Wind velocity, Landforms, Perturbations, Topography, Reprints.
Identifiers: Escarpments.

No abstract available.

AD-A065 262/8GA PC **A03**/MF **A01**
Germantown Labs., Inc., Philadelphia, PA.
Chemical Release Payloads for Stratospheric Wind Measurements 1977-1978 and Related Programs.
Final rept. 4 Jan 77-30 Sep 78,
Charles S. Stokes, William J. Murphy, and Edward W. Smith. 30 Oct 78, 32p AFGL-TR-78-0307
Contract F19628-77-C-0018

Descriptors: *Atmospheric sounding, Smoke, Sounding rockets, Payload, Turbulence, Stratosphere, Wind velocity, Wind shear, Chemical reactions, Trimethylaluminum, Titanium compounds, Chlorides, Water, Alcohols, Methyl radicals, Fabrication.
Identifiers: *Chemical release studies.

This report covers work performed on four series of chemical payload launches on sounding rockets. These launches took place at White Sands Missile Range, New Mexico. NASA Wallops Station, Virginia and Churchill Research Range, Manitoba, Canada. These operations included design, fabrication, assembly and launch services for chemical payloads containing trimethyl aluminum or titanium tetrachloride - methanol/water. (Author)

AD-A065 267/7GA PC **A14**/MF **A01**
Naval Research Lab., Washington, DC.
The EOMET Cruise of the USNS HAYES: May - June 1977.
Memorandum rept.,
Stuart G. Gathman, and Ben G. Julian. 31 Jan 79, 321p Rept no. NRL-MR-3924

Descriptors: *Marine atmospheres, Meteorological instruments, Electrooptics, Boundary layer, Aerosols, Optical properties, Atmospheric temperature, Dew point, Meteorological data, North Atlantic Ocean, Gulf stream, Coastal regions, Open water, Mediterranean Sea, Air water interactions, Optical radar.

The Atmospheric Physics Branch of NRL's Ocean Sciences Division executed a multidisciplined cruise devoted to observing the electro-optical and meteorological (EOMET) properties of marine atmosphere using state of the art instrumentation. This report encompasses a farily complete description of the results of this cruise. In an effort to organize the data archive this data was transferred by various means to the disc files of the NRL PDP-10 computer. Although considerable care was exercised in this process, there is no doubt that in an effort of this magnitude that errors were made in this transfer process.

AD-A065 365/9GA PC **A04**/MF **A01**
Air Force Inst. of Tech., Wright-Patterson AFB, OH.
Estimation of Big Thompson Flood Rainfall Using Infrared Satellite Imagery.
Master's thesis,
Dennis Eugene Bielicki. 1978, 71p Rept no. AFIT-CI-79-79T

Descriptors: Floods, Colorado, *Rainfall, Meteorological satellites, Infrared images, Digital systems, Estimates, Theses, Weather.
Identifiers: *Big Thompson Canyon, *Flash floods, Thunderstorms, Rainfall intensity, GOES-1 satellite, Spaceborne photography.

During the evening hours of 31 July, 1976, heavy precipitation fell along the Colorado Front Range, resulting in flash flooding in the Big Thompson Canyon, causing the death of 139 people with 35.5 million dollar damage. This report utilizes GOES-1 infrared (IR) imagery to estimate the heavy convective precipitation during the Big Thompson Flood. Analysis of the IR imagery prior to the Big Thompson storm showed that the thunderstorm complex formed at the intersection of frontal and orographic convective lines. A technique is developed to overlay the drainage basins onto the satellite imagery using the AFI Digital Video Imaging System for Atmospheric Research (ADVISAR) which included corrections due to the satellite sensing cloud tops. The Scofield-Oliver satellite-derived precipitation estimation scheme was modified to reduce the precipitating portion of the cloud to 15 percent of the cloud defined by the 242 K isotherm. IR imagery alone was used to identify overshooting domes which correlated well with areas of heavy precipitation. The computed area averaged precipitation for the Big Thompson Basin was 9.6 percent less than ground truth. Digital-video manipulation on the ADVISAR can indicate areas of heavy precipitation for IR satellite data on a real time basis. (Author)

AD-A065 367/5GA PC **A04**/MF **A01**
Air Force Inst. of Tech., Wright-Patterson AFB, OH.
A Two-Dimensional Numerical Model of Dry Convection with Three-Dimensional Dynamics.
Master's thesis,
James Charles Weyman. Aug 78, 66p Rept no. AFIT-CI 79-74

Descriptors: *Convection(Atmospheric), Mathematical models, Computer applications, Numerical analysis, Three dimensional, Geostrophic wind, Aerodynamic forces, Prandtl number, Equations of motion, Theses.
Identifiers: Eddies.

A numerical model for the study of dry, three-dimensional, small scale, atmospheric convection is presented for use with a two-dimensional grid in the vertical xz plane. All of the derivatives in the horizontal y dimension are derived through the assumptions of cyclostrophic balance, symmetry of circular eddies, and horizontal isotropy of derivatives. Variable eddy coefficients, proportional to the deformation field and the square of the grid interval, are used. Comparisons with a similar two-dimensional model shows the thermals in this pseudo three-dimensional model develop sooner and reach a larger maximum vertical velocity faster. These results are comparable to what other researchers of three-dimensional models have found. The economy of computation of this model will enable other investigators to make better use of limited computer facilities. (Author)

AD-A065 468/1GA PC **A04**/MF **A01**
Air Force Inst. of Tech., Wright-Patterson AFB, OH.
Diurnal Variation of Wind Profiles Across Mountainous Terrain during and Air Stagnation Period.
Master's thesis,
Julius Augustus Jackson, Jr. 1978, 72p Rept no. AFIT-CI-79-113T

Descriptors: *Wind velocity, *Air pollution, Atmospheric motion, Wind direction, Diurnal variations, Summer, Boundary layer, Jet streams, Low altitude, Sulfur oxides, Theses.
Identifiers: Appalachian Mountains.

The diurnal variation of wind profiles across mountainous terrain during an air stagnation period was evaluated for 7 days in July, 1957. The study was conducted across the North-Central Appalachian Mountains, an area of heavy pollution concentration; it was divided into easterly (16-18 July) and westerly (19-22 July) flow across the mountains. Examination over the 7 days showed a diurnal variation in boundary layer winds on the eastern side of the mountain range with a maximum amplitude of about 3 to 4 m/sec at 1000-1500 m MSL in both the easterly and westerly flows. On the western side of the mountain range, a diurnal variation with a maximum amplitude of about 4 m/sec at 600-1100 m MSL occurred in both flows. This oscillation in the lower levels showed the presence of a low-level jet, which was unexpected in that this study was conducted during an air stagnation period. The low-level jet in the easterly flow across the mountains reaches a maximum wind speed at approximately 0600 GMT at about 300 m above ground level. In the westerly flow, the low-level jet occurs at approximately 1200 GMT at 600-800 m above the ground. This low-level jet is due to an

inertial type oscillation driven by the diurnal variation of the frictional forces aided by thermal forcing.

AD-A065 469/9GA PC **A06**/MF **A01**
Colorado State Univ., Fort Collins. Dept. of Atmospheric Science.
A Diagnostic Case Study of the 9-11 August Period During GATE.
Master's thesis,
Joseph John Butchko. 1978, 116p AFIT-CI-79-114T
Grant NSF-ATM76-09370

Descriptors: *Tropical cyclones, *Air mass analysis, Troposphere, Convection(Atmospheric), Jet streams, Atmospheric motion, Pacific Ocean.
Identifiers: Atmospheric disturbances, Clouds(Meteorology), Atlantic Ocean, Tropical regions, Vortices, GATE project, Theses.

Several analysis techniques are used to determine the structure of a disturbance which traversed the GATE A/B ship array from 9 to 11 August 1974. Emphasis is placed on the identification of an easterly wave and the tropospheric structure associated with it. The disturbance is also viewed as a pretropical cyclone cloud cluster. The vorticity, divergence, and vertical motions fields are compared to field derived from western Pacific cloud clusters.

AD-A065 470/7GA PC **A05**/MF **A01**
Air Force Inst. of Tech., Wright-Patterson AFB, OH.
Development of Doppler Radar Techniques for Severe Thunderstorm Wind Advisories.
Master's thesis,
Joel David Bonewitz. 1978, 78p Rept no. AFIT-CI-79-73

Descriptors: *Thunderstorms, *Doppler radar, *Weather forecasting, Wind, Computer programs, Meteorological data, Tornadoes, Air mass analysis, Data acquisition, Statistical analysis, Theses.

No abstract available.

AD-A065 474/9GA PC **A05**/MF **A01**
Colorado State Univ., Fort Collins. Dept. of Atmospheric Science.
Cloud Analysis from Bi Spectral Satellite Data,
Christopher Mendola, and Stephen K. Cox. Sep 78, 87p CSU-ATSP-295, AFIT-79-77-T
Grants NSF-OCD74-21678, NSF-ATM77-15369

Descriptors: Meteorological satellites, Wind, Weather forecasting, Upper atmosphere, Meteorological data, Spectra, Theses.
Identifiers: *Clouds(Meteorology), *Cloud cover, Numerical analysis, Infrared detection, Temperature.

A horizontal differencing bi-spectral technique has been developed which includes an iteration scheme for reducing errors in computed cloud amount. The technique requires that cloud surfaces over the area of application be horizontally homogeneous, and as developed, assumes that the observed maximum and minimum brightness counts represent cloud and clear filled resolution points respectively. These values are then used to normalize the data in computing total cloud amount. The computed results of the horizontal differencing bi-spectral method, as applied to real data sets, have been compared to the results obtained from a modified frequency distribution method and the general bi-spectral method. The results of this comparative analysis indicate that the computed cloud amounts of the horizontal differencing method are less variable than for the frequency distribution and general bi-spectral methods, and are thus better suited for objective analyses. The computed cloud temperatures of the horizontal differencing method were also shown to be more realistic than those computed by the general bi-spectral method.

AD-A065 475/6GA PC **A06**/MF **A01**
Colorado State Univ., Fort Collins. Dept. of Atmospheric Science.
Measurement of Thunderstorm Cloud-Top Parameters Using High-Frequency Satellite Imagery.
Master's thesis,
Stephen Paul Pryor. 1978, 111p AFIT-CI-79-76T
Grant NSF-ATMS76-21307
Original contains color plates: All DDC and NTIS reproductions will be in black and white.

Descriptors: *Meteorological data, *Thunderstorms, Meteorological satellites, Infrared images, Weather forecasting, Storms, Wind, Synoptic meteorology, Television systems, Theses.
Identifiers: Clouds(Meteorology), Radar echoes, GOES-1 satellite, Advection.

Variations of thunderstorm cloud-top parameters are examined using high temporal frequency satellite digital data. The day chosen as a case study, 5 May 1977, featured an extensive severe weather outbreak and was part of the Research Rapid Scan Day program during which three-minute interval satellite data was collected from GOES-1. Overshooting top heights, measured by a shadow casting method, are added to infrared-determined heights and compared to radar echo top heights. Good agreement is noted between satellite-determined tops and radar echo tops. Overshooting tops are significantly higher just prior to hail occurrences than for tornado occurrences. Infrared imagery is found not to be adequate to reliably identify overshooting tops. Growth rate diagrams for five storms yield little in the way of signatures which would be an aid in prediction of severe weather events. An image differencing technique is demonstrated which may be of some aid in quantitatively measuring thunderstorm growth and advection. This study stresses the analysis of digital satellite data with a sophisticated video imaging system, the All Digital Video Imaging System for Atmospheric Research (ADVISAR) at Colorado State University. (Author)

AD-A065 476/4GA PC **A04**/MF **A01**
Air Force Inst. of Tech., Wright-Patterson AFB, OH.
A Technique for Using Synoptic Analogs to Predict the Development of Tropical Depressions into North Atlantic Hurricanes.
Master's thesis,
David Alan Grimm. May 78, 65p Rept no. AFIT-CI-79-92T

Descriptors: *Hurricanes, *Weather forecasting, North Atlantic Ocean, Mathematical prediction, Analogs, Synoptic meteorology, Atmospheric disturbances, Intensity, Storms, *Tropical regions, Low pressure, Statistical analysis, Meteorological data, Long range(Time), Hurricane tracking, Theses.

This study presents a method for using the output of the U.S. Navy long range (analog) forecast model to predict the development of tropical depressions in the North Atlantic Ocean into tropical storms or hurricanes. The technique is applied to North Atlantic tropical depressions which formed in the period from 1974 through 1977. Sample cases, statistical analyses of results, and verification of the technique are presented. Results show that the method successfully predicts tropical depression development. Recommendations are made to streamline and improve the technique. (Author)

AD-A065 481/4GA PC **A10**/MF **A01**
Drexel Univ., Philadelphia, PA. Dept. of Physics and Atmospheric Sciences.
Drexel Tower Data Analysis for Wind Shear,
Summary rept.
Herman Newstein. Sep 78, 206p FAA-RD-78-136
Contract DOT-FA77WA-3938

Descriptors: *Wind shear, Data acquisition, Test equipment, Temperature inversion, Fronts(Meteorology), Thunderstorms, Synoptic meteorology.
Identifiers: Wind direction.

A Summary Report of Drexel Tower Data Analysis for Wind Shear is provided. Meteorological measurements made over a 7-year period on a 1000 ft tower were analyzed for frequency of occurrence of wind shears at various levels, frequency of occurrence of wind shears with wind directions at various levels, wind shear magnitudes related to temperature differences at various levels and occurrences of wind shears in connection with inversions, fronts, and thunderstorms. It is shown that there is no one unique recognizable situation that will produce wind shears of any specific magnitude. (Author)

AD-A065 486/3GA PC **A07**/MF **A01**
Systems and Applied Sciences Corp., Riverdale, MD.
Synpotic Analysis Case 1, 1 March 1978-4 March 1978,
Don Chin, and Harry D. Hamilton. 1 Nov 78, 129p SCIENTIFIC-1, AFGL-TR-78-0294
Contract F19628-78-C-0138

Descriptors: *Synoptic meteorology, *Weather forecasting, Data acquisition, United States, Profiles, Atmospheric temperature, Barometric pressure, Wind velocity, Clouds.

The synoptic scale weather conditions over the continental United States for the period 1-4 March 1978 is documented in support of the Large Scale Cloud Systems Program. Included in this report are the flight tracks of the research aircraft, a narrative description, and analyses of meteorological parameters from the surface to 300 mb. (Author)

AD-A065 491/3GA MF **A01**
Air Force Inst. of Tech., Wright-Patterson AFB, OH.
An Analysis of the Data Collection Modes of a Digital Weather Radar System with Respect to Significant Severe Weather Features.
Master's thesis,
Michael Arthur Neyland. Aug 78, 155p Rept no. AFIT-CI-79-111T
Availability: Microfiche copies only.

Descriptors: *Meteorological data, *Weather forecasting, Weather stations, *Storms, Global, Data acquisition, Statistical analysis, Warning systems, Marine meteorology, Meteorological satellites, Theses.
Identifiers: *Severe storms, *Meteorological radar, Radar echoes, Meteorological charts.

Dual wavelength digital weather radar data were collected at zero deg elevation angle in all four modes of collection possible with the Texas A and M University weather radar system (1 and 2 deg and 1 and 2 km modes). These data were processed and displayed as contoured maps of reflectivity. These maps were then analyzed, both qualitatively and quantitatively, in an effort to determine an optimum mode of collection with respect to retention of meteorological features and data processing resources required to produce the maps. The results indicated that significant differences exist between the reflectivity displays obtained from the different collection modes. Results from two of the modes are good, while the other two modes suffer from enough loss of detail and accuracy to make their usefulness questionable. Additionally, the Texas A and M University digital weather radar system and the two computer programs used to process the data were explained. (Author)

AD-A065 508/4GA PC **A07**/MF **A01**
Air Force Inst. of Tech., Wright-Patterson AFB, OH.
Comparison of Precipitating Cumulus Cells: Model-Generated Versus Radar-Observed.
Master's thesis,
Judson Edward Stailey. May 78, 139p Rept no. AFIT-CI-79-110T

Descriptors: *Cumulus clouds, *Convection(Atmospheric), Cloud physics, Computerized simulation, Atmosphere models, Cylindrical bodies, Linear systems, Clustering, Meteorological data, Humidity, Atmospheric temperature, Upper atmosphere, Radar reflections, Marine meteorology, Tropical regions, Atlantic Ocean, Theses.
Identifiers: GATE project.

The purpose of this study was twofold: to evaluate the ability of a circularly symmetric two-cylinder model of a precipitating cumulus cell to simulate radar-observed cells, and to ascertain to what accuracy the model input variables need to be known to obtain realistic results. Data from GATE were used, in part because the tropical atmosphere during the experiment contained relatively little vertical wind shear. Cells organized into two types

of mesoscale features, a line and a cluster, were simulated. Because of the variability observed in the cell characteristics, the mesoscale features were idealized into geometrically simple configurations of 'representative' cells. The representative cells were geometrically compatible with the model and had dimensions based on the average sizes of observed cells. The size of the model inner cylinder, assumed to be the region of active convection, was estimated from the areas of observed reflectivity cores. The size of the outer cylinder, analogous to the environment of the cells, was estimated from distances between cells in the mesoscale features. This idealization process produced what appeared to be realistic dimensions.

AD-A065 509/2GA PC **A03**/MF **A01**
Air Force Inst. of Tech., Wright-Patterson AFB, OH.
Trends in Atmospheric Visibility Across the United States from 1955 to 1972.
Master's thesis,
Jerrold Stuart Foster. 1978, 47p Rept no. AFIT-CI-79-115T

Descriptors: *Visibility, Synoptic meteorology, Degradation, United States, Wind velocity, Wind direction, Meteorological data, Linear regression analyses, Time series analysis, Spectrum analysis, Humidity, Correlation techniques, Seasonal variations, Theses.
Identifiers: Trends, *Weather observatins, Weather forecasting.

Regular daytime synoptic observations from 14 stations across the United States, excluding observations with relative humidity greater than or equal to 90%, and with precipitation or fog present, were used to determine if a trend in the visibility, existed from 1955 to 1972. Trend analysis by comparison of statistics at the beginning and the end of the period and by linear regression of the monthly mean visibilities were used to uncover any relationship between visibility and other meteorological variables such as wind speed, wind direction, and relative humidity. Time series analysis of the visibility and relative humidity by spectrum and cross-spectrum analysis was also performed. The results of this study seem to indicate: (1) a deterioration of the visibility at all 14 stations, (2) a bimodal (six to twelve month) oscillation in the annual cycle of the visibility, and (3) that relative humidity is inversely correlated with the annual cycle of the visibility. (Author)

AD-A065 511/8GA PC **A14**/MF **A01**
Naval Weather Service Command, Washington, DC.
U.S. Naval Weather Service Numerical Environmental Products Manual,
Edwin T. Harding. 22 Feb 79, 322p NAVAIR-50-1G-522-REV
Supersedes report dated 1 Jun 75, AD-A024 702.

Descriptors: *Meteorological data, Manuals, *Marine meteorology, Storms, Air water interactions, Weather forecasting, Numerical methods and procedures, Global, Meteorological satellites, Computers, Naval research, Wind, Weather stations.
Identifiers: Numerical weather forecasting, Fleet Numerical Weather Central.

During the past decade, numerical forecasting has assumed a dominant role in Naval Weather Service operations. Numerical objective analyses and prognoses have largely replaced the old ponderously-produced, subjective manual products. The decision to explore the feasibility of adopting numerical forecasting in the Navy was motivated by the growing evidence that the huge volume of available hemispheric data had outrun man's ability to digest it efficiently. Computers offered an exciting prospect of being able to do a much better job. A strong consideration for computers was the growing demand in the Navy for a wider range of high-quality products, particularly oceanographic products. The decision to explore the Navy potential in numerical forecasting was not one to be taken lightly, since this would ultimately involve a large allocation of Naval Weather Service assets in men and money with no assurance that these assets could be provided by drawing from existing field activities. Numerical forecasting was still a struggling infant as a scientific tool, and many were convinced that numerical forecasting would remain forever in the R and D stage, never to appear operationally. The founding fathers of today's Fleet Numerical Weather Central (FNWC) were aggressive and knowledgeable. In a surprisingly short time, programs were developed, rapid communications methods were devised, and computer products were receiving favorable evaluations in the field. This early success encouraged further support for an expansion of the numerical development group. The goal was to build toward a Naval Weather Service System around FNWC.

N79-19569/9GA PC **A11**/MF **A01**
National Weather Service, Camp Springs, MD.
Synoptic Analyses, 5-, 2-, 1-, and 0.4-Millibar Surfaces for July 1976 Through June 1977.
Dec 78, 226p NASA-RP-1032
NASA ORDER P-59946-G

Descriptors: *Synoptic meteorology, Atmospheric circulation, Climatology, Meteorological satellites, Sounding rockets, Wind(Meteorology), Data acquisition, Data processing, Geopotential height, High altitude, Northern hemisphere, Pressure measurements, Temperature measurement.
Identifiers: *Atmospheric pressure.

For abstract, see STAR 1710

PB-292 997/4GA PC **A05**/MF **A01**
Colorado State Univ., Fort Collins. Dept. of Atmospheric Science.
Characteristic Size Spectra of Cumulus Fields Observed from Satellites,
Malcolm Douglas Gifford, and Thomas B. McKee. Nov 77, 90p AS-PAPER-280
Grants NSF-OCD75-13924, NSF-ATM76-80568
Also pub. as ISSN-0067-0340. Sponsored in part by Department of the Air Force, Washington, DC.

Descriptors: *Cloud cover, *Cumulus clouds, Remote sensing, Dimensions, Meteorological satellites, Spaceborne photography, Aerial photographs, Comparison, Density distribution functions, Density(Number/volume), North Carolina, Florida, Tropical regions, Atlantic Ocean.
Identifiers: SMS-1 satellite.

A technique is presented which allows the investigator to monitor size distributions of small scale cumulus fields using satellite data. The limitations of the technique are shown to be the resolution and quality of the satellite imagery. Twenty-four samples of small cumulus are studied using DMSP and SMS-1 satellite imagery. A total of eleven DMSP samples are examined from North Carolina and Florida. These samples are compared to six DMSP samples and seven SMS-1 samples drawn from cumulus fields observed over the subtropical and tropical Atlantic Ocean. Comparisons are based on parameters derived from the least-squares solutions of a linearized first order exponential model. An exponential decrease in cloud number density with increasing cloud diameter is exhibited in both the mean cloud number density distributions of the case studies and the cloud number density distributions of selected typical cumulus samples. The poorer data quality of the SMS-1 imagery is seen to cause deviations from the exponential model in approximately 40% of the samples.

PB-293 016/2GA PC **A06**/MF **A01**
Colorado State Univ., Fort Collins. Dept. of Atmospheric Science.
Stratocumulus Convection Off the West Coast of South America,
Ellen J. Steiner, and Wayne H. Schubert. May 77, 110p AS-PAPER-270
Grants NSF-DES74-11438, NSF-ATM76-09370
Also pub. as ISSN-0067-0340.

Descriptors: *Stratocumulus clouds, *Convection, Heat transfer, Coasts, Boundary layer, Mathematical models, Atmospheric temperature, Moisture, Air masses, Wind(Meteorology), Heat flux, Trajectories, Divergence, South America, Equatorial regions, South Pacific Ocean.

The stratocumulus regime off the South American coast is investigated using a horizontally inhomogeneous version of Lilly's (1968) cloud topped mixed layer model. This model is coupled with a longwave radiation model devised by Cox (1973) and Cox et al. (1976). Computed are the mixed layer temperature and moisture structure and convective fluxes as the marine layer air moves equatorward along trajectories calculated from the mean surface wind field. By the calculation of many such trajectories, two dimensional fields of the model parameters were derived for the region bounded by 75 degrees W and 100 degrees W, and 2.5 degrees S and 27.5 degrees S. Model runs were made for mean July and August conditions, and sensitivity tests were performed to show the effects of solar absorption and different initial divergences. Variations in the mixed layer temperature and moisture structure, and convective fluxes are described for each of these experiments.

PB-293 018/8GA PC **A04**/MF **A01**
Colorado State Univ., Fort Collins. Dept. of Atmospheric Science.
A Laboratory Investigation of Radiative Transfer in Cloud Fields,
James A. Kuenning, Thomas B. McKee, and Stephen K. Cox. Apr 78, 66p AS-PAPER-286
Grants NSF-OCD74-21678, NSF-ATM77-15369
Sponsored in part by National Oceanic and Atmospheric Administration, Rockville, MD. GATE Project Office. Also pub. as ISSN 0067-0340.

Descriptors: *Cloud physics, Clouds(Meteorology), Reflectance, Albedo, Model tests, Monte Carlo method.
Identifiers: *Radiative transfer, Optical thickness.

Finite clouds were simulated with laboratory models in an investigation of cloud interaction distances, variation of the cloud interaction distances as a function of cloud height, and radiative properties of cloud fields. Comparisons were made between laboratory data and Monte Carlo calculations. The center cloud in a 3 x 3 array of modeled clouds was found to have a 5% increase in the top directional reflectance over the isolated cloud case at a separation of 2.5 cloud diameters, and increased to 30% at a separation of one cloud diameter. The increase of the top directional reflectance as the separation increased behaved similar to 1/S2 where S is the cloud separation. The cloud interaction distance was found to rapidly increase as the height to diameter ratio increased, but then leveled off as the optical thickness of the clouds got larger than about 100 to 125. It was concluded that cubic clouds separated by more than 2.5 cloud diameters could be treated as non-interacting clouds.

PB-293 181/4GA PC **A03**/MF **A01**
Illinois State Water Survey, Urbana.
Record Winter Storms in Illinois, 1977-1978.
Rept. of investigation,
Stanley A. Changnon, Jr., and David Changnon. 1978, 30p ISWS/RI-88/78, W79-05013
Prepared in cooperation with Illinois Dept. of Registration and Education, Springfield.

Descriptors: *Snowstorms, *Weather observations, *Illinois, Snowfall, Damage, Hazards, Winter, Snow cover, Wind(Meteorology), Ice, Atmospheric temperature, Mortality, Losses, Highways, Public utilities, Transportation.
Identifiers: *Severe storms.

The Midwest, including Illinois, experienced in 1977-1978 its most severe winter since weather records began in the early 19th century. The major impact in Illinois came from a record-breaking number of 18 severe winter storms. In a normal year, only 4 storms occur. The record winter began with three snowstorms in late November and ended with an extremely damaging ice storm in late March. Unusual snow patterns occurred with several storms, and they lasted in Illinois much longer than usual. Weather conditions (low pressure centers) producing many of the storms were more often of Canadian origin than usual, and these lows had lower pressure and moved slower than normal, resulting in higher surface winds and longer lasting and hence more severe storms. Cold temperatures coupled with the frequent snowstorms resulted in record long-lasting snow cover with up to 120 days with 1 inch or more cover in northern Illinois and 90 days in southern Illinois. The storms led to deaths of 62 persons and injuries to more than 2,000. Utilities and communication systems suffered great losses due to damage to lines, poles and towers. Transportation

losses included damaged vehicles, delayed shipments, and great delays in bus and airline service; however, railroads benefited with increased usage, and helicopters and snowmobiles proved valuable in rescue service. The local, state, and federal institutions were beset with enormous and costly problems, including care of roads and lost taxable income due to absenteeism.

5. BEHAVIORAL AND SOCIAL SCIENCES

5A. Administration and Management

AD-A064 986/3GA PC **A03**/MF **A01**
Naval Postgraduate School, Monterey, CA.
A Review of the Material Requisition Billing Process. An IDA Approach.
Master's thesis,
John R. McGraa. Dec 78, 49p

Descriptors: *Accounting, *Naval procurement, Management information systems, Finance, Timeliness, Decision making, *Information processing, Modification, Theses.
Identifiers: *Billing, *IDA(Integrated disbursing and accounting), Purchasing.

This thesis presents a general review of the implementation of the Integrated Disbursing and Accounting (IDA) Project as it relates to the material requisition billing process. The manner in which the material requisition billing process was conducted before and after IDA implementation is reviewed. The primary goal of Project IDA was the improvement in the timeliness and accuracy of financial information. The specific purpose of the thesis is to determine whether or not IDA goals are being achieved. This thesis resolved that the initial IDA implementation achieved those goals with respect to procurement and to blanket purchase agreements. Additional procedures are required which will include imprest fund and referral transactions. The thesis concludes with a discussion on areas that, subject to additional procedure changes, might further improve the timeliness of financial information processing. (Author)

AD-A064 997/0GA PC **A04**/MF **A01**
Naval Postgraduate School, Monterey, CA.
A Review and Analysis of the On-Going Implementation of Budget Automation at CINCLANTFLT.
Master's thesis,
Christopher Douglas Huber. Dec 78, 60p

Descriptors: *Naval budgets, *Management information systems, Planning programming budgeting, Finance, Systems analysis, Systems engineering, Allocations, Resource management, Manpower utilization, Optimization, Theses.

The Commander In Chief, U.S. Atlantic Fleet (CINCLANTFLT) was tasked with developing a prototype system for the automation of field budget data so that it could be rolled up at the Major Claimant level for use as an input to the automated Major Claimant budget submission. Perhaps the most important phase of this program was the development of an integrated Financial Management Information System (FMIS). This project was designed to automate substantial portions of budget formulation, presentation and justification for an annual budget of approximately 2.5 billion dollars. This thesis is a concentrated study and analysis of FMIS development at CINCLANTFLT. Analyses conducted included a review of current manual bugdet procedures at CINCLANTFLT, presentation of a theoretical FMIS model, and a detailed study of design and implementation of each phase of FMIS. Comparisons and conclusions are made between the model and actual FMIS implementation. Some general recommendations are submitted for consideration. (Author)

AD-A065 123/2GA PC **A02**/MF **A01**
Army Missile Research and Development Command, Redstone Arsenal, AL. Product Assurance Directorate.
Reliability Growth Projection.
Technical rept.,
Richard L. Nutt. 26 Apr 78, 18p Rept no. DRDMI-Q-78-1

Descriptors: *Management engineering, *Reliability, Growth(General), Operations research, Production models, Flow charting, Estimates, Parametric analysis.
Identifiers: *Reliability growth management, *Quality assurance.

This technical report presents two general procedures for projecting reliability growth. One provides for the adjustment of an actual growth curve for a similar system by the use of K-factors. The other assumes the Duane reliability growth model and requires estimation of the starting point and the reliability growth constant. (Author)

AD-A065 299/0GA MF **A01**
Deputy Chief of Staff for Research Development and Acquisition (Army), Washington, DC.
Department of the Army Justification of Estimates for Fiscal Year 1980, Submitted to Congress January 1979, Procurement Programs, Aircraft, Missiles Weapons and Tracked Combat Vehicles Ammunition and Other Procurement, Army. Part 1 thru 5.
Jan 79, 446p
Availability: Microfiche copies only.

Descriptors: *Army procurement, *Army budgets, Cost estimates, Army equipment, Guided missiles, Army aircraft, Combat vehicles, Tactical weapons, Ammunition, Tracked vehicles, Flight simulators, Military requirements, Estimates.

In justification of programs requested, this document provides backup data for the Army Budget submission for FY 1980. Included are Summaries of Requirements, Program and Financing Statements and Selected Data Sheets.

AD-A065 484/8GA PC **A05**/MF **A01**
Air Force Inst. of Tech., Wright-Patterson AFB, OH.
The Suspension of Work Clause.
Master's thesis,
Jeffrey Michael Denson. 30 Sep 78, 99p Rept no. AFIT-CI-79-107T

Descriptors: Contracts, *Litigation, Construction, *Delay, Regulations, Procurement, United States Government, Decision making, Damage, Compensation, Costs, Recovery, Military procurement, *Contract administration, Allocations, Theses.
Identifiers: *Suspension of work clause, *Fixed price contracts, Breach of contract.

Delays in the performance of Government contracts probably have accounted for more losses and a greater percentage of business failures among Government contractors than any other single complication that can arise in the field of Government procurement. This is particularly true in construction contracts. The purpose of this thesis is first to briefly examine the law relating to the Government's responsibility for delay which it causes; second, to trace development and ascertain the impact of the Suspension of Work clause which affects this responsibility. The impact of the Suspension of Work clause is on fixed-price construction contracts, advertised or negotiated, and consequently the examination is limited to this contract type.

AD-A065 485/5GA PC **A06**/MF **A01**
Air Force Inst. of Tech., Wright-Patterson AFB, OH.
Post-Acceptance Liability for Latent Defects, Fraud and Gross Mistakes Amounting to Fraud in Government Fixed-Price Supply and Construction Contracts.
Master's thesis,
Lake Benjamin Holt, III. 30 Sep 78, 125p Rept no. AFIT-CI-79-105T

Descriptors: Contracts, *Defects(Materials), *Litigation, Supplies, Construction, Quality control, Errors, Inspection, Faults, Acceptance tests, Decision making, *Contract administration, Quality assurance, United States Government, Theses.
Identifiers: *Fixed price contracts, Fraud, Latent defects, Liability(Law).

In the world of government contracts for supplies and construction, the method of insuring contract performance and protecting the buyer is different from private commercial contracts. It is government policy to obtain these objectives by establishing a specific contractual right to conduct or require intensive and comprehensive inspection and testing during the entire life of the contract. In exchange for this broad right of inspection, the Government has given up almost all non-warranty rights and remedies for defective work discovered after acceptance; it has, however, retained the right to seek redress for latent defects, or defects the acceptance of which were induced by fraud or gross mistakes amounting to fraud. The stated exceptions to finality of acceptance have been a continuous source of controversy between the Government and its contractors. This thesis examines the nature and meaning of latent defects, fraud, and gross mistakes amounting to fraud in fixed-price supply and construction contracts as established by the numerous decisions of boards and courts, and seeks to determine if these exceptions to finality have been an effective tool for the Government.

JPRS-72996 PC**$10.25**/MF**$3.00**
Joint Publications Research Service, Arlington, VA.
Automated Control Systems in Moscow and Its Suburbs,
N. I. Pevnev. c14 Mar 79, 186p VAAP/SA-78/04 Trans. of mono. Asu V Moskve i Podmoskov'ye, Moscow, 1976 p1-215.
Also available on Standing Order: $8.20 - Domestic, $16.40 - Foreign.

Descriptors: *Automatic control, *Management control, *Production control, Systems management, Computers, Planning, Econometrics, Systems engineering, Industries, Electrical industry, Metal industry, Chemical industry, Transportation, Construction, Industrial plants, Translations, USSR.
Identifiers: Moscow(USSR).

The report contains information describing the role of automated control systems as an important path for the improvement of production control and the management of economic activity in industries. A detailed description is presented of the development of ASU's used by large enterprises and organizations in Moscow and its suburbs.

N79-19912/1GA PC **A03**/MF **A01**
National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
Management System, Organizational Climate and Performance Relationships.
B. D. Davis. Feb 79, 38p NASA-TP-1417, M-281

Descriptors: Decision making, *Management systems, Psychological factors, Communication, Correlation, *Performance, Statistical correlation.
Identifiers: *Organization theory.

For abstract, see STAR 1710

PB-292 992/5GA PC **A11**/MF **A01**
Engineering Foundation, New York.
Conference Proceedings on Contingency Planning for Materials Resources Held at Pacific Grove, California on December 4-9, 1977,
Edward B. Berman. Dec 77, 239p NSF/RA-780483
Contract NSF-AER77-12135

Descriptors: *Supply management, *Management planning, *Meetings, Contingency, Resources, Policies, Materials, Evaluation, Economic analysis, Technology.
Identifiers: *Contingency planning.

This is a report of a conference organized to explore what policy options exist for reducing the potential losses derived from major short-term discontinuities of supply for non-renewable, nonenergy resources through contingency planning. The discontinuities refer to war, labor disputes, political upheavals, and more recently international cartel action, environmental safety, and other government regulations. The term contingency refers to an event that may or may not occur. Contingency planning implies planning ahead for what might happen. The report includes papers presented at

the conference which covered the following topics: lessons of past supply contingencies; contingency resource policy options; evaluative methods; institutional/political issues; the economics of resource policy evaluation; and the role of materials technology. During discussions a theme developed that, although the guidance of the market could not be relied on in short-term supply disruptions, the market is still a vital mechanism in our society. The total displacement of the market by a system of allocation and price controls should be used only in an extreme emergency, and probably never in peacetime.

PB-293 072/5GA PC **A05**/MF **A01**
Battelle Columbus Labs., OH.
Indicators of the Output of New Technological Products from Industry.
Final rept.,
Herbert S. Kleiman. 13 Feb 75, 76p
Contract NSF-C936

Descriptors: *Technology innovation, *Industries, *United States, Product development, Output, Research, Classifications, Organizations, Competition, Methodology, Employment, Descriptions, Manufacturers, Tables(Data), Time series analysis.
Identifiers: *Industrial technology, Research and development, Organization size, Industrial structure.

For the years 1963-74, the annual selection of the 100 most significant new technical products as published in Industrial Research were classified by Standard Industrial Classification (SIC), by type and size originating organization, and, by product field.

PB-293 111/1GA CP **T02**
Office of Management and Budget, Washington, DC. Budget Review Div.
Budget and Budget Title Files (FY 80).
Data file,
Karl Heissner, and Michael V. Kenion. Jan 79,
mag tape OMB/DF-79/002
Source tape in is EBCDIC character set. Tapes can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions. Price includes documentation, PB-293 112.

Descriptors: *Data file, *Budgeting, *National government, Accounting, Classifications, Coding, Organizations, Financial management, Records, Fiscal policies, Identifying, Magnetic tape.
Identifiers: *Budgets, Accounts receivable, Master account title file, Geocoding(United States), Federal programs.

The FY 80 Budget and Budget Title data file contains three files. (1) The Master Account Title (MAT) file contains the authorized identification codes for all appropriation accounts appearing in the budget; the authorized chapter/agency, organization/bureau, and appropriation account titles to be used in the budget; a complete cross-reference of all OMB appropriation accounts to the Treasury identification codes; and, sequencing and identification codes for computer-generated reports. The file controls the entry of data into the Appropriation Account Data (AAD) computer file. (2) The Receipt Account Title (RAT) file contains titles and codes related to the receipt accounts in the Budget (see OMB Circular A-11, Section 22.3 for a discussion of Budget Accounts). (3) The Budget Preparation System Master (BPS) File contains approx. 32,000 records and consists of the following record types: Program and Finance Schedule Data (P&F); Supplementary Source Document A Data (SSD-A); Supplementary Source Document B Data (SSD-B); Supplementary Source Document C Data (SSD-C); Object-Classification Data; Federal Credit Data; and Receipt Data. The information contained in these records provides the financial input to the production of the tables and analyses appearing in The Budget of the United States.

PB-293 112/9GA PC **A03**/MF **A01**
Office of Management and Budget, Washington, DC. Budget Review Div.
Budget and Budget Title Files (FY 80).
Karl Heissner, and Michael V. Kenion. 20 Jan 79,
50p OMB/DF-79/002A
For data file on magnetic tape, see PB-293 111.

Descriptors: *Budgeting, *National government, Accounting, Classifications, Coding, Organizations, Financial management, Records, Fiscal policies, Identifying, Descriptions.
Identifiers: *Budgets, Accounts receivable, Master account title file, Geocoding(United States), Federal programs, Data element directories, Data files.

The FY 80 Budget and Budget Title data file contains three files. (1) The Master Account Title (MAT) file contains the authorized identification codes for all appropriation accounts appearing in the budget; the authorized chapter/agency, organization/bureau, and appropriation account titles to be used in the budget; a complete cross-reference of all OMB appropriation accounts to the Treasury identification codes; and sequencing and identification codes for computer-generated reports. The file controls the entry of data into the Appropriation Account Data (AAD) computer file. (2) The Receipt Account Title (RAT) file contains titles and codes related to the receipt accounts in the Budget (see OMB Circular A-11, Section 22.3 for a discussion of Budget Accounts). (3) The Budget Preparation System Master (BPS) File contains approx. 32,000 records and consists of the following record types: Program and Finance Schedule Data (P&F); Supplementary Source Document A Data (SSD-A); Supplementary Source Document B Data (SSD-B); Supplementary Source Document C Data (SSD-C); Object-Classification Data; Federal Credit Data; and Receipt Data. The information contained in these records provides the financial input to the production of the tables and analyses appearing in The Budget of the United States.

PB-293 302/6GA PC **A07**/MF **A01**
Ohio State Univ., Columbus. Merchon Center for Education in National Security.
Area-Wide Planning in CETA (Comprehensive Employment and Training Act).
Final rept. 1978,
Randall B. Ripley, Grace A. Franklin, Jane C. Ax, Donald C. Baumer, and Carl E. Van Horn. 28 Feb 79, 135p DLMA-21-39-75-10-21
Contract DL-21-39-75-10
Prepared in cooperation with Smith Coll., Northampton, MA., and Rutgers - The State Univ., New Brunswick, NJ. Eagleton Inst. of Politics.

Descriptors: *Project planning, *Performance evaluation, *Disadvantaged groups, Government policies, Specialized training, Employment, Unemployment, Placement, Local government, National government, Decision making, Project management, Models, Cost analysis, Forecasting.
Identifiers: Comprehensive Employment and Training Act, Labor force.

The report focuses on planning for Title I (now Title IIABC) of CETA at the prime sponsorship level. Results are compared on some questions with national averages and with observations in 30 other prime sponsorships in which intensive field work was done for previous studies. The most general finding is that careful planning by prime sponsorship staff does, indeed, have the potential for helping improve program performance. There is solid evidence that prime sponsorships can target their resources on the most disadvantaged part of the eligible population as measured by gross demographic characteristics without diminishing their potential for good program performance.

PB-293 338/0GA PC **A03**/MF **A01**
Harvard Univ., Boston, MA. Graduate School of Business Administration.
The Productivity Dilemma: Roadblock to Innovation in the Automobile Industry. Executive Summary.
Final rept.,
William J. Abernathy. 1977, 29p NSF/PRA-74-17-2
Grant NSF-DA-74-20571

Descriptors: *Productivity, *Technology innovation, *Automotive industry, Manufacturing, Product development, Automobiles, Economic factors, Cost engineering, Regulations, Economic analysis, Technology assessment, Competition, Market research, Production planning.
Identifiers: Research and development, Industrial structure, Industrial technology.

From the innovation of a new product until its maturity, many important changes take place in: the type of technological innovation, the way innovation is managed, the use of technology to improve productivity, the sources of innovation and in industry structure. The report uses a life cycle perspective in studying changes in productivity, process technology and innovation: first as a generalized model and secondly through historical analysis of a major U.S. product--the automobile. The course of technological change in U.S. automobile engine plants and assembly plants, from 1900 to the present are contrasted and analyzed as to degree of development, to cast new light on the course of technological progress.

PB-293 381/0GA PC **A06**/MF **A01**
Ohio Legislative Service Commission, Columbus.
A Program Review of the Development of Public Service Facilities in State Parks.
Dec 78, 110p STAFF RR-127
Report of the Program Review Committee to Study the Development of Public Service Facilities in State Parks.

Descriptors: *State government, *Parks, *Facilities, Public land, Services, Recreation, Contract management, Ohio, Legislation, Leasing, Bids, Financing, Government policies, Recommendations, Contracts, Revenue, Public opinion, Expenses.
Identifiers: *Public facilities, Concessions, Concessional sales.

The report discusses the following aspects of public service facilities in Ohio's state parks: Development history including financing and legislative objectives; alternative operating methods; solicitation and awarding of bids to concessionaires; modification and changes to agreements; administration of concessionaire operating agreements; and financial return and public opinion of the public service facilities.

PB-293 543/5GA PC **A03**/MF **A01**
National Committee on Tunneling Technology, Washington, DC. Subcommittee on Management of Major Underground Construction Projects.
Recommendations for Better Management of Major Underground Construction Projects. Executive Presentation.
Executive summary.
1978, 31p NSF/RA-780467
Grant NSF-DAR76-21335
See also report dated Dec 78, PB-290 855. Sponsored in part by Department of Transportation, Washington, DC. Office of the Secretary, and Urban Mass Transportation Administration, Washington, DC.

Descriptors: *Contract administration, *Underground facilities, Cost engineering, Tunneling(Excavation), Project management, Urban transportation, Rapid transit railways, Mass transportation.
Identifiers: *Tunnel construction.

This report identifies procedures and practices in major underground construction projects and recommends improved procedures that will ensure more efficient and economic execution of these projects. It is the continuation of a previous study by the subcommittee on Contracting Practices of the U.S. National Committee on Tunneling Technology which noted that many of the problems encountered in the contracting and construction phases of underground projects result from actions taken in development, pre-design, and design phases. A hypothetical model of a major urban underground transportation construction project is described in detail. One of the most important causes of management is delayed decisive action. Thirty-nine most critical elements of a project are listed. Steps leading to completion and operation of the project are outlined. Recommended objectives and specific recommendations to support each objective are presented in the concluding section. The report is intended for use by government organizations, professional associations, and industry concerned with underground construction.

PB-293 620/1GA PC **A02**/MF **A01**
National Center for Productivity and Quality of Working Life, Washington, DC.
A Summary of the Future of Productivity,
N. A. Rockefeller, J. A. Mark, R. E. Kutscher, J. R. Norsworthy, and E. F. Denison. 1977, 25p
See also PB-293 621. Sponsored in part by Council on International Economic Policy, Washington, DC., and National Science Foundation, Washington, DC. Research Applied to National Needs.

Descriptors: *Productivity, *Meetings, Trends, Growth, Forecasting, Personnel development, Economic development, Technology innovation, Quality of life, Labor unions, Incentives, Industries.
Identifiers: Quality of worklife.

This document is a summary of a report based on the November 1976 conference The Future of Productivity. This document contains summaries of the eight papers prepared for the conference, along with analyses and critiques by economists from unions and business organizations. This conference, attended by businessmen, labor leaders, government officials, and distinguished scholars, was convened to focus public attention on the importance of productivity growth to a healthy economy and to examine the prospects for productivity growth during the next decade.

PB-293 621/9GA PC **A07**/MF **A01**
National Center for Productivity and Quality of Working Life, Washington, DC.
The Future of Productivity,
N. A. Rockefeller, J. A. Mark, R. E. Kutscher, J. R. Norsworthy, and E. F. Denison. 1977, 140p
See also PB-293 620. Sponsored in part by Council on International Economic Policy, Washington, DC., and National Science Foundation, Washington, DC. Research Applied to National Needs.

Descriptors: *Productivity, *Meetings, Trends, Growth, Forecasting, Personnel development, Economic development, Technology innovation, Quality of life, Labor unions, Incentives, Industries.
Identifiers: Quality of worklife.

The document presents eight papers authored by leading researchers and analyses and critiques by economists from trade unions and business organizations prepared for the November 1976 conference The Future of Productivity. Outlooks for future productivity growth in the United States, Japan, Western Europe and the United Kingdom are discussed in the papers. This conference, attended by businessmen, labor leaders, government officials, and distinguished scholars, was convened to focus public attention on the importance of productivity growth to a healthy economy and to examine the prospects for productivity growth during the next decade.

PB-293 828/0GA PC **A03**/MF **A01**
National Science Foundation, Washington, DC. Applied Science and Research Applications.
Applied Research, Program Report, Volume 2, Number 9, November 1978.
Nov 78, 36p NSF-78-73, NSF/RA-780460

Descriptors: *Research projects, *Project management, Utilization, Objectives, Project planning, Evaluation, Reviews.

The report documents reviews and evaluations of NSF programs and activities. It presents a candid appraisal of program content, management, organization, and major trends as well as problems of senior management concern and interest. The introduction gives background information on the establishment and operation of the Division of Applied Research. Basic issues in applied research drawn up in the 1970 report are compared to the 1977 report, which also defines applied research, and the similarities are pointed out. The objectives of applied research programs are stated and pursued under two sections; Applied Social and Behavioral Sciences and Applied Physical, Mathematical, and Biological Sciences and Engineering Applications. A series of charts outlines the structure and goals of the applied research program. Research issues involved with generating a knowledge base for automation are discussed. A discussion on telecommunications is concerned with advances in computer science, materials, solid state electronics, and transmission technology. The summary and review section addresses the questions of how the Division relates to basic research activities, how it provides an 'open window' for high quality proposals, and how it links with research user communities.

PB-293 829/8GA PC **A03**/MF **A01**
National Science Foundation, Washington, DC. Applied Science and Research Applications.
Integrated Basic Research, Program Report, Volume 2, Number 10, November 1978.
Nov 78, 28p NSF/RA-780461

Descriptors: *Research projects, *Project planning, Research management, Project management, Objectives, Documents.
Identifiers: State of the art reviews.

The booklet presents a review of integrated basic research (IBR) for the new Directorate of Applied Science and Research Applications (ASRA). Strictly speaking, it is not a program review because the IBR program is not yet underway. The rationale for the current report is that IBR is the focal point for ASRA's interaction with the rest of the National Science Foundation (NSF), particulaly the basic research activities, and it is important to acquaint the senior management of the foundation with the information obtained thus far. Program plans are still in the formulation stage and this presentation is designed to elicit open candid discussion. Reports include IBR objectives, program genesis, advanced measurement investigation, and funding strategy.

PB-293 840/5GA PC **A07**/MF **A01**
Municipal Finance Officers Association of United States and Canasa, Washington, DC.
A Guidebook to Improved Financial Management for Small Cities and Other Governmental Units,
Philip Rosenberg, and C. Wayne Stallings.
c1978, 127p* ISBN-0-89125-021-0, NSF/RA-780454
Grant NSF-APR76-19208
Prepared in cooperation with Peat, Marwick, Mitchell and Co., Chicago, IL., and Georgia Univ., Athens. Inst. of Government. Library of Congress catalog card no. 78-71709.

Descriptors: *Local government, *Financial management, Guidelines, Policies, Municipalities, Management methods, Budgeting, Planning, Accounting, Liabilities.
Identifiers: *Small cities.

The purpose of the guidebook is to help local officials understand the basics of financial management in local government and how financial management can facilitate their policy-making role. This guidebook presents a variety of model financial management practices which have proven beneficial in many municipal governments, including operating budgeting, capital improvement programming and budgeting, accounting, debt management, and treasury management. These practices cannot be implemented without incurring some cost, however. Depending upon a municipality's current staff capability, it may take some time to implement many of the practices. After reviewing this guidebook and selecting the financial management practices which are deemed desirable, responsible officials of the particular municipality should be consulted to evaluate the costs of implementing each practice and to develop a reasonable implementation plan.

PB-293 873/6GA PC **A04**/MF **A01**
Small Business Administration, Washington, DC.
Petite Entreprise: La Conception des Produits (Design Is Your Business).
Mar 63, 64p SMALL BUSINESS MANAGEMENT SER-10
Text in French. Sponsored in part by Agency for International Development, Washington, DC.

Descriptors: *Product development, *Production management, Decisionmaking, Coordination, Manufacturing, Packaging, Sales management, Marketing, Production engineering, Engineers, Design criteria, Consulting services.
Identifiers: *Design preferences, Developing country application.

Product design is studied in light of product manufacture, packaging, and sales. The coordination of product design and packaging as well as using the services of a consulting engineer are covered, but the businessman's final responsibility for design decisions over the consulting engineer is stressed. Essential principles of design policy are outlined and a short bibliography is included.

PB-294 415/5GA PC **A06**/MF **A01**
Small Business Administration, Washington, DC.
Creer et Gerer une Petite Entreprise de Construction (Starting and Managing a Small Building Business),
John R. Immer. 1962, 113p
Sponsored in part by Agency for International Development, Washington, DC. Text in French.

Descriptors: *Businesses, *Management, Investments, Financial management, Sales, Publicity, Industrial relations, Financing, Land use, Inventory control, Commercial law, Construction.
Identifiers: *Small businesses, *Business administration, Developing country application.

Everything a new entrepreneur needs to know about starting a business is thoroughly covered in the handbook. Some of the topics covered include business structure, risks, capital management, mortgages, credit sources, business law, permits, building codes, insurance, employee relations, stock management, publicity and advertising, sales, business documentation for management, building plans and construction, preventing and meeting problems that cause delays, examples of several construction business failures and successes, amassing capital, future planning, land purchase and management, land subdivision and parcelling, and transportation. A special section is devoted to sources of further information.

5B. Documentation and Information Technology

AD-A065 002/8GA PC **A06**/MF **A01**
Air Force Academy, CO.
Annual Research Progress Report Number 13, 1 July 1977-30 September 1978.
Oct 78, 125p

Descriptors: *Data acquisition, *Scientific literature, *Reports, Engineering, Social Sciences, Weapon systems, Space systems, Logistics.

No abstract available.

AD-A065 399/8GA PC **A03**/MF **A01**
Office of Naval Research, London (England).
European Scientific Notes. Volume 32, Number 4,
Aubrey W. Pryce, and Victoria S. Hewitson. 30 Apr 78, 43p Rept no. ESN 32-4

Descriptors: *Naval research, *Reports, Technology forecasting, Symposia, Europe.

Contents: Overview of Remote Sensing Program in the USSR Academy of Sciences; The 'Water Lens' Makes a Big Splash in Norway; Wave Power, UK--Britannia Rules the Waves; More Energy from the Sea...And Why the Sea is Boiling Hot; Electrical Engineering at Birmingham; Defects in Stuttgart; The Belgian Center for Corrosion Study; Numerical Analysis and Software Development at NPL; Yet Another Example of Changing Times; Acoustics, the Theater, the Performer, and the Audience; Laser Spectroscopy at Edinburgh; Fluid Mechanics at the Universidad Politecnica de Madrid; If Hebrew Can Be Typed Without Much Training, Can English Be Far Behind; Computer Models for Personnel Selection; and Evidence for a New Biological Rhythym Is Emerging.

AD-A065 400/4GA PC **A03**/MF **A01**
Office of Naval Research, London (England).
European Scientific Notes. Volume 32, Number 5,
Aubrey W. Pryce, and Victoria Hewitson. 31 May 78, 42p Rept no. ESN-32-5

Descriptors: *Naval research, *Reports, Symposia, Technology forecasting, Europe.

Contents: Balloons Are Still Fashionable in France; More on Space from British Aerospace Company; Making Decisions on Nuclear Energy--British Ways; Unintended Jamming; Copper Alloys in the Marine Environment; Doing More with Less with Surface Coatings; Mehr Licht, Mehr Licht -- Semiconductor Luminescence Research at Philips; Physicits Tackle Organic Solids at the University of Stuttgart; Stability Studies at the Universidad Autonoma de Madrid; Fluid Mechanics at the Escuela Tecnica Superior de Ingenieros Industriales de Tarrasa; Laser Sounding in the Stratosphere at Appleton Laboratory; Human Factors and the Fighter Aircraft Cockpit of the 1990s; and How Pilots Are Selected in West Germany.

AD-A065 412/9GA PC **A04**/MF **A01**
Air Force Systems Command, Washington, DC.
Compendium of Test Terminology,
John R. Carlson, George R. Thomson, John Sivy, James F. LeCroy, and William D. Bryden, Jr. Dec 78, 58p Rept no. AFSC-TR-79-02

Descriptors: *Test and evaluation, *Dictionaries, Joint military activities, Word lists, Standards.
Identifiers: *Terminology, *Definitions.

This Compendium of Test Terms provides a reference document for the working level person in a joint service program. It is a source document which lists the most commonly used definitions for standard test terms. This Compendium should be of benefit during all interservice dialogue concerning test and evaluation. (Author)

AD-A065 430/1GA PC **A04**/MF **A01**
Office of Naval Research Scientific Liaison Group, APO San Francisco 96503.
ONR Tokyo Scientific Bulletin. Volume 3, Number 2. April - June 1978,
Bruce J. McDonald, and Eunice Mohri. 1978, 62p

Descriptors: *Foreign technology, Japan, Australia, Far East, Cryogenics, Metallurgy, Lightning, Rheology, Radiology, Sea water, Flow visualization, Oceanography, Superconductivity.

Partial Contents: Ultralow-Temperature Physics in Japan; Rheology in Australia; Japanese Standard Seawater; 1977 International Symposium on Flow Visualization; and Superconductive Electronics in Japan.

ED-156 220 Not available NTIS
United Nations Educational, Scientific, and Cultural Organization, Paris (France).
Meeting of Experts on Planning Documentation and Library Networks in Africa (NATIS).
Jul 76, 11p CC-76/CONF.610/4
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, MF$0.83 Only, Plus Postage.

Descriptors: *Developing nations, Information needs, *Information networks, Library associations, Library education, Library networks, Library planning, Personnel needs, Planning meetings.
Identifiers: Africa.

The main objectives of this meeting held in Brazzaville, People's Republic of Congo from July 5 to 10, 1976 were to examine recent efforts made by Africa Member States to plan and develop their national information systems (NATIS), and make recommendations for the creation of networks of documentation and library services adapted to the rapidly evolving needs of African users. This document summarizes the meeting under the following headings: (1) Introduction, (2) Participants, (3) Opening of the Session, (4) Election of the Bureau, (5) Agenda, (6) Summary of the Discussions, and (7) Summary of the Recommendations. Lists of meeting participants and the organizations which observed the session are provided in the appendix.

ED-157 496 Not available NTIS
A View of the International Environmental Information Problem,
Marta L. Dosa. Jun 73, 26p
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, MF$0.83 Only, Plus Postage.

Descriptors: Conference reports, *Environmental education, Information dissemination, *Information networks, Information services, International programs, Library role, Referral.
Identifiers: *United nations, *Meetings.

This report discusses the meetings of the United Nations Environment Programme Governing Council and the World Assembly of Non-Governmental Organizations Concerned with the Global Environment in Geneva June 5-26, 1973. The need for environmental information was constantly stressed and ways of exchanging information discussed. A demonstration of a pilot project of the International Referral Service is described and the next steps in its development are indicated. The concluding remarks are concerned with the role of environmental information and education in the United Nations Environment Programme.

ED-157 497 Not available NTIS
Community Information Centers and the Computer,
John M. Carroll, and Jean M. Tague. 1975, 9p
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$1.67, MF$0.83 Plus Postage.

Descriptors: *Community information services, Comparative analysis, Computers, Data bases, Human services, *On line systems, Performance, Relevance(information retrieval).
Identifiers: Ontario(Canada), Canada.

Two computer data bases have been developed by the Computer Science Department at the University of Western Ontario for 'Information London,' the local community information center. One system, called LONDON, permits Boolean searches of a file of 5,000 records describing human service agencies in the London area. The second system, called INDEX, consists of the same information classified into 45 subject-oriented files. Users retrieve a file by subject keyword and browse through it. Online retrieval using the two computer-based files and manual searching using the telephone directory were compared in an experiment carried out by students at the UWO School of Library and Information Science. Systems were evaluated on the basis of answers to a set of 16 questions, both with respect to the time taken to obtain a correct answer and the number of satisfactory or correct answers produced. Four analyses of variance were applied to the data obtained: effect of question order on proportion of correct answers, comparison of the three systems in terms of time to reach satisfactory answers, time to reach an answer when location of the information in the data base was known, and proportion of questions correctly answered. Results indicate that the greatest potential for the computer lies in the production of agency lists and updated manual indexes rather than in direct online retrieval.

ED-157 501 Not available NTIS
Library Service to Part-Time Students at Trent University. A Study,
John A. Wiseman. Feb 76, 24p
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$1.67, MF$0.83 Plus Postage.

Descriptors: Extension education, Library facilities, *Library services, Library surveys, Off campus facilities, *Part time students, Questionnaires, *University libraries, Use studies.
Identifiers: Canada.

This study began as a joint venture between Trent University and Queen's University to identify any existing inadequacies in Library service to part-time students, and to determine what could be done to improve access to library resources. Because of the significantly different organization of part-time studies at the two schools, two questionnaires were developed and two reports of findings were prepared. Only the Trent report is included in this document; however, the exchange of ideas between the universities was reciprocally useful. The methodology for compiling data included a five question survey of public libraries in the area, a two question survey of nearby university libraries, and a questionnaire which was mailed to part-time students. Comments from the libraries and statistics from the questionnaires are presented. The 13 recommendations proposed at the conclusion of the study call for modification of on-campus services and further development of off-campus facilities.

ED-157 502 Not available NTIS
Minnesota Univ., Minneapolis. Univ. Libraries.
Academic Library Materials: Budgeting and Allocation (A Review of the Literature),
Gary M. Shirk. Oct 76, 19p
Portions of this document are not fully legible.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$1.67, MF$0.83 Plus Postage.

Descriptors: Bibliographies, *Budgeting, Development, *Library collections, Library expenditures, Library materials, Literature reviews, *Resource allocations.
Identifiers: *Academic libraries, Universities.

This literature review focuses on methods for determining collection development requirements of a university library. Five criteria were used in the selection of titles for review: immediate relevance to university library collections and allocations; degree of emphasis on empirical methodologies; publication dates within the last 10 to 15 years; ease of access; and indexing in 'Library Literature.' Consideration of each of the following topics includes a summary of relevant thought and indicates the appropriate citation in the bibliography: Allocation by Formula; Selectivity, Adequacy and Collection Evaluation; Formula Factors; and Efficiency/Equity.

ED-157 518 Not available NTIS
National Policy and Access to Federal Information--A View from the Hinterlands,
Harry E. Welsh. Apr 78, 30p
Paper presented at the Institute on Federal Document and Information Accessibility, Washington, DC, April 27-28, 1978.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$2.06, MF$0.83 Plus Postage.

Descriptors: *Depository libraries, *Federal government, Government publications, Government role, *Information dissemination, Policy formation.

National information policy should recognize the depository library system as the public's natural and traditional access point to Federal information. Despite efforts of agencies, Congress, and national commissions to improve access, citizens are still confused and frustrated in obtaining public Federal information. Certain issues of public policy and administrative laxness and indecision impairing depository libraries' effectiveness should be resolved in the interest of public information accessibility. Congress should view these libraries as a link with its constituents and enhance the information services. Cast in a new role, depository libraries could not only provide publications, but also refer inquirers to other Federal information resources.

ED-157 519 Not available NTIS
American Library Association, Chicago, IL. Reference and Adult Services Div.
The Black Experience: A Bibliography of Bibliographies, 1970-1975,
Ron Blazek. 1978, 69p
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, MF$0.83 Only, Plus Postage. Also available from American Library Association, Reference and Adult Services Division, 50 E. Huron Street, Chicago, IL. 60611 ($5.00. Payment should accompany orders for single copies).

Descriptors: Annotated bibliographies, *Bibliographies, Black culture, Black history, Black literature, Blacks, *Black studies.
Identifiers: Negroes, Minority groups.

The bibliographies listed in this document have been advertised in the literature of librarianship or in library indexes and represent as complete a listing as possible of resources readily available to public and academic libraries. All aspects of the black experience, including history, culture, health, education, economic status, and literature are covered. There are four sections to this work: (1) a simple listing of the many bibliographies emanat-

ing from the Council of Planning Librarians in Monticello, Illinois; (2) an annotated listing of separately published bibliographies which comprises the major segment of the text; (3) an alphabetical listing by author of journal articles determined to be primarily bibliographic in nature; and (4) a listing of bibliographies which were identified but not actually examined by the compilers of this publication.

ED-157 520 Not available NTIS
A Management Information System Design for a General Museum. Museum Data Bank Research Report No. 12,
Sandra Scholtz. 1976, 17p
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$1.67, MF$0.83 Plus Postage.

Descriptors: Catalogs, Data Bases, Flow charts, Information storage, *Management information systems, *Museums, *Recordkeeping.

A management information system (MIS) is applied to a medium sized general museum to reflect the actual curatorial/registration functions. The recordkeeping functions of loan and conservation activities are examined since they too can be effectively handled by computer and constitute a complementary data base to the accession/catalog information. Museum master files for accession, loan, conservation, and master catalog files; and appendices which include accession, loan, and conservation file data categories, sample forms, and selected references, are also included.

ED-157 521 Not available NTIS
National Library of Australia, Canberra.
Directory of Technical Information Sources for Industry. Networks Study No. 7.
1978, 166p
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, MF$0.83 Only, Plus Postage.

Descriptors: *Directories, *Industry, Information needs, Information networks, Information services, *Information sources, Libraries, Special libraries, Trade and industrial education.
Identifiers: *Australia.

This publication seeks to bring together sufficient details of information sources relating to the technical and scientific needs of industry so that workers can identify the most appropriate source for a given problem. Produced under the guidance of the Australian Industry Information Network Liaison Committee convened by the National Library of Australia, it contains 775 entries arranged by state or territory. Each entry provides the name and address of the institution, the name of the person to be contacted, a description of the subject fields covered, the library holdings (if any), and the consultancy services available. A subject index, data base and publications index, and an organization index are included.

ED-157 523 Not available NTIS
The Impact of the Economy on Libraries and the Impact of Libraries on the Economy of New York State,
Shirley B. Johnson. Apr 78, 20p
Position Paper prepared for the New York Governor's Conference on Libraries. Portions of this document are not fully lebible.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$1.67, MF$0.83 Plus Postage.

Descriptors: Economic climate, Economic factors, Financial support, *Inflation(Economics), Library expenditures, Library services, *Public libraries.
Identifiers: New York(New York).

New York's library system, which helps to attract desirable information related industries, is endangered by inflation and budget stringency. Library costs have increased more rapidly than the general price level. Technological improvements, cost-saving in the long run, require initial capital outlays. The growth of book collections must keep pace with the informaton explosion. Public libraries receive a declining share of local expenditures making urban libraries particularly vulnerable, and reductions in Federal support have been felt in New York more than in most states. Service may be reduced or it may be supported through private philanthropy or user fees. Elite reference collections should charge fees to users such as the information industry, thus converting some library costs from 'external economies' to costs born by firms which can readily afford them. If there is no alternative financing, user fees may be necessary. The cost of maintaining excellence in libraries is much less than the cost of not doing so.

ED-157 525 Not available NTIS
National Inst. of Education, Washington, DC. Educational Resource Div.
Educational Research Library Periodical Holdings List.
Jan 78, 187p
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$10.03, MF$0.83 Plus Postage.

Descriptors: *Educational resources, Foreign language periodicals, Library collections, *Periodicals.

This Third Edition of the 'Periodical Holdings List' consists of three sections: Part I lists Indexes and Abstracts; Part II lists titles of journals in the general collection; and, Part III lists the journals in the foreign collection (includes non-English language periodicals and serials). Each section is arranged alphabeticaly by title. Periodicals received at the Branch Library, U.S. Office of Education, are included.

ED-157 526 Not available NTIS
Pennsylvania State Library, Harrisburg.
ACLCP Periodical Storage Center: Feasibility Study, September 1974-April 1975,
Dorothy Cieslicki. Apr 75, 21p
Best copy available.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$1.67, MF$0.83 Plus Postage.

Descriptors: Costs, Feasibility studies, Government publications, Library cooperation, *Library materials, Library networks, Models, Periodicals, Planning, Reference materials, *Storage, Tables(Data).

A study of alternative models for establishing a cooperative storage center for little used library materials by the members of the Area College Libraries of Central Pennsylvania (ACLCP) focused on periodicals. Considerations discussed include advantages--lower cost; space for growth and better access to holdings retained in active collections; decreased duplication by continuous weeding; possibility of creating a depository for oudated government documents and a single copy file of outdated reference service items; (2) models provided by existing systems: Hampshire Inter-Library Center--a jointly ownd research collection supplementing library holdings of participating institutions; Center for Research Libraries--a scholarly store of seldom used potential research materials; New England Deposit Library--overflow of materials from 12 major libraries in the Boston Area; and Medical Library Center of New York--medical journals, texts, and monographs transferred from 30 medical libraries in New York City; and (3) storage options for ACLCP--a decentralized system where each library copes with its own storage problems; a shared retention plan; the creation of a physically separate cooperative storage center; or participation in a storage center operated on a statewide or larger scale. Recommendations favor creation of a separate facility for ACLCP libraries.

ED-157 528 Not available NTIS
Hawaii Library Association, Honolulu.
Conference Glossary. Prepared for the Second Governor's Conference on Library and Information Services (2nd), at Honolulu, Hawaii, on June 11-13, 1978,
Wil Frost. Jun 78, 24p
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$1.67, MF$0.83 Plus Postage.

Descriptors: Conferences, Definitions, *Glossaries, *Information science, *Library science, Word lists.

This glossary was compiled to provide refeence material for participants at Hawaii's Second Governor's Conference on Library and Information Services and is especially useful to those individuals not familiar with the terminology of the library and information sciences. Entries consist of 194 names, acronyms, and other terms which are arranged in a single alphabet and briefly defined. Terms for the glossary were selected by a task force on the basis of an outline of topics to be discussed at the conference.

ED-157 532 Not available NTIS
A Preliminary Thesaurus of Environmental Engineering Terms for an Individual Information Retrieval System,
Joni K. Grady. 21 Mar 78, 30p
Best copy available.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$2.06, MF$0.83 Plus Postage.

Descriptors: Classification, Engineering, *Environmental research, Information retrieval, *Thesauri, Water pollution control.

Wastewater treatment, microbiology, biochemistry, and engineering are the major subject areas covered in this preliminary thesaurus designed for use in a private information retrieval system. The thesaurus was developed throug, meetings where each descriptor was discussed, necessary scope notes were written, definition and cross references were added, and the final term format was compared with other thesauri. Included are directions for retrieval procedures, guidelines for indexing, an explanation of the main entry format of the descriptors, and the 220 descriptors.

ED-157 533 Not available NTIS
Colorado State Univ., Ft. Collins. Libraries.
A Bibliography of Colorado State University Imprints in the Colorado State University Libraries. Publication No. 21, Supplement One,
Andrew Kolesar. 1978, 28p
For related document, see ED-143 376.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$2.06, MF$0.83 Plus Postage.

Descriptors: Bibliographic citations, *Bibliographies, *Library collections, Publications, Research, State universities, University libraries.

This is the first yearly supplement to the first edition of a bibliography compiled to bring together all the publications in the Colorado State University Libraries which bear the University imprint. The supplement lists an additional 170 citations of print and nonprint materials published by the University in the areas of scholarship, research, and literature. The arrangement is either by author or main entry as they appear in the Colorado State University Libraries' card catalog, followed by date of publication, pagination, and other pertinent data regarding illustrations, portraits, maps, and the physical size of the material. Content notes, descriptive information, and the call number conclude the entry. Name, title, and subject indexes refer the reader directly to the numbered bibliographic entry.

ED-157 534 Not available NTIS
Directory of Federal Grant Sources and Sources of Private Funds Given to Public Libraries in New York State,
Kathleen Parsons, and Stephen G. Marvin. Jan 78, 17p
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$1.67, MF$0.83 Plus Postage.

Descriptors: *Directories, Federal aid, Financial support, Foundation programs, *Grants, Private financial support, *Public libraries.
Identifiers: *New York.

This directory to grant aid for public libraries in New York State has been prepared for use and distribution by the New York State Subcommitee on Libraries. It lists possible funding sources in three categories: Federal library sources, other Federal sources, and private sources. Information on eligibility, purpose, type, amount, and address is provided for each source. An additional section lists

groups that, although not specifically library oriented, may give assistance for special projects, e.g., building modifications for the handicapped. This is not a comprehensive listing of funding sources; there are other federal and private sources which were not listed in the reference sources consulted for the compilation of this directory. A bibliography of reference sources, articles, books, and reports on public library finance is included.

ED-157 535 Not available NTIS
Wisconsin Univ., Madison. Library School.
The Latino Communications Project: An Investigation of Communication Patterns and Organizational Activity among Mexican, Cuban, and Puerto Rican Residents of Chicago.
Final rept.,
Daniel F. Duran, and Margaret E. Monroe. Oct 77, 555p
Grant OEG-007603015
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$30.13, MF$1.00 Plus Postage.

Descriptors: Community surveys, Field interviews, Information needs, Information seeking, Information sources, Information utilization, *Library services, *Organizational communication, Problem solving, Public libraries, *Spanish Americans, Spanish speaking, Use studies.
Identifiers: Formal voluntary associations, *Chicago(Illinois), Illinois.

This exploratory study gathered data on the communication behavior, resource utilization, and organizational activity of Mexican, Cuban, and Puerto Rican residents of Chicago. An interdisciplinary and integrative literature review synthesizing findings from the relevant literature suggested classes of variables and relationships for this investigation. A stratified cluster probability sample was used to select 400 Latinos who were interviewed by trained bilingual interviewers using a structured schedule. Findings indicate that both reading activity and public library use are positively and significantly related to participation in formal voluntary associations for the Latino population, while measures of media use developed here are not so related, even when controlled for ethnic subgroup membership or for formal educational level. On the other hand, adult education activity is a highly discriminating variable in predicting both reading activity and public library use for uban Latino 'barrio' residents. Finally, the bond of Spanish language is a major determinant of interpersonal and impersonal communication activity. Implications for urban public library service to Latinos include: (1) need for personal contact with the unaffiliated who rely on local information resources; (2) development of material collections reflecting local Spanish language orientations; (3) public library integration with neighborhood networks of Latino groups and individuals; and (4) necessity for library staff of Latino background.

ED-157 536 Not available NTIS
Denver Research Inst., CO.
Serving Senior Patrons: Integrated Media.
Final rept.,
Ruth M. Katz. Nov 77, 43p
Grant OEG-007603347
For related document, see IR 006 121.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$2.06, MF$0.83 Plus Postage.

Descriptors: Audiovisual aids, Community information services, Gerontology, Health services, *Library services, *Older adults, Professional continuing education, *Public libraries, Senior citizens, Slides, Tape recordings, Video cassette systems.

A set of five 3/4 in. color videocassettes and two slide/sound shows on topics relating to public library services to an aging population was developed. These programs, together with a study guide, are known as the VINTAGE series and were designed for use by library staffs in small and medium-sized public libraries. Five tasks were completed during the project period: needs assessment, scripting and design, production, evaluation and field-testing, and dissemination. The final report includes a bibliography of items found to be useful by the project staff. Project conclusions note the ongoing need for continuing education and staff development software, and for project durations longer than twelve calendar months. Recommendations include investigating the feasibility of developing a software clearinghouse, increasing the use of telecommunications to deliver training, and funding for regional production centers.

ED-157 537 Not available NTIS
Denver Research Inst., CO.
Delivering Library Services to an Aging Population,
Ruth M. Katz. Dec 77, 30p
Sponsored in part by Office of Education, Washington, DC. For related document, see IR 006 120.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$2.06, MF$0.83 Plus Postage.

Descriptors: Audiovisual aids, Community information services, Gerontology, Health services, *Library services, *Older adults, Professional continuing education, *Public libraries, Senior citizens, Slides, Study guides, Tape recordings, Video cassette systems.

This study guide was prepared to assist library personnel in using the VINTAGE series, which consists of five color videocassette programs and two slide/sound shows on topics relating to public library services to the aging. The guide to these programs, which were designed for use in staff development programs and to promote community involvement, provides objectives, an outline, and suggested discussion topics for each program. Topics focus on problems of older people, including special needs; stereotypes; access to health, library, and other community services; and employment opportunities. A bibliography of materials on aging, legal and consumer issues, and barrier-free architecture is included.

ED-157 538 Not available NTIS
San Jose State Univ., CA.
Promotion and Publicity for On-Line Bibliographic Services in Academic Libraries.
Master's thesis,
Herbert Jeffery Paul. May 78, 62p
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, MF$0.83 Only, Plus Postage.

Descriptors: Bibliographic citations, Comparative analysis, Data bases, Guidelines, Library services, Library surveys, Masters theses, Models, *On line systems, *Publicize, *University libraries.
Identifiers: *Academic libraries.

A synthesis of the literature on the advertising and promoting of online bibliographic retrieval services in academic libraries was conducted to suggest specific approaches and methods that can be used to make the academic community more aware of these services. Six levels of activity in program planning for promoting online services are identified and discussed: general program guidelines and statement of objectives; research and study of the problem; identification of user characteristics; selection of strategies to achieve objectives; operation of the program; and evaluation and revision. Various techniques and strategies for developing and promoting materials in eight different formats are discussed and a model promotional program is developed to enable managers and librarians to follow a systematic approach. Comparison of promotional materials developed for online services in 27 academic libraries with selected general promotional programs and materials that hve received the John Cotton Dana Library Publicity Award shows a wide range in the level of professionaism and sophistication. It is suggested that efforts to-date in promoting these services have been ineffectual and that this is an area where librarians can learn from other related disciplines. A list of additional techniques for promotion and a bibliography are included.

ED-157 543 Not available NTIS
Cable Television: A Bibliographic Up-Date,
Edward F. Newren. 1976, 38p
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$2.06, MF$0.83 Plus Postage.

Descriptors: *Bibliographies, *Cable television, Community services, Educational resources, Media research, Media technology, Technical reports.

This bibliography, directed to researchers and practitioners in cable television (CATV), has two purposes. The first intent is to summarize chronologically earlier bibliographies; the second is to provide a comprehensive coverage of information which has more recently been made available. The 461 citations from 1973 through June 1976 are listed in three categories: (1) community use, technical information, and regulatory aspects; (2) CATV libraries; and (3) educational concerns.

ED-157 545 Not available NTIS
Battelle Columbus Labs., OH.
A Needs Assessment Study of Oklahoma Libraries to Oklahoma Department of Libraries.
Final rept.,
Beverly A. Rawles. May 78, 255p
Sponsored in part by Office of Education, Washington, DC. For related document, see IR 006 286.Portions of this document are not fully legible.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, MF$0.83 Only, Plus Postage.

Descriptors: Change strategies, Data analysis, Financial support, Guidelines, History, Interagency cooperation, Library networks, *Needs assessment, Organization, Planning, *Public libraries, Questionnaires, State agencies, Tables(Data).
Identifiers: Oklahoma.

The findings and recommendations of a needs assessment study of Oklahoma libraries are presented, with recommendations focusing on public libraries. (School, academic, and special libraries also participated in this survey.) Included are: (1) the methodology; (2) an historical development of Oklahoma libraries; (3) the essential elements of library service, including objectives for providing service, standards indicating level of service, available resources, and interlibrary cooperation to help meet user needs. An examination of legislation and funding, and organization and establishment of library services by local communities to provide a picture of current library service, and a discussion of the Oklahoma Department of Libraries to determine its support of library development on a statewide basis are also presented. Culminating this report are planning documents providing for future development of libraries, including objectives and programs for meeting user needs. Recommendations are presented throughout this report where they apply. Appendices include questionnaires, and demographic and economic trends in Oklahoma.

ED-157 546 Not available NTIS
Battelle Columbus Labs., OH.
A Needs Assessment Study of Oklahoma Libraries for Oklahoma Department of Libraries.
Summary rept.
May 78, 26p
Sponsored in part by Office of Education, Washington, DC. For related document, see IR 006 285.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$2.06, MF$0.83 Plus Postage.

Descriptors: Change strategies, Communication(Thought transfer), Financial support, Graphs, Librarians, Library networks, *Needs assessment, Professional continuing education, *Public libraries, State agencies, Statewide planning, Tables(Data).
Identifiers: Oklahoma.

The major findings and recommendations of a needs assessment study of Oklahoma libraries are summarized. Recommendations focus on public libraries; however, school, academic, and special libraries also participated in this survey. Top priority needs include: more professionally trained librarians; continuing professional education; additional state funding; cooperation among Oklahoma counties to provide improved library service; strong leadership and a larger professional staff at the Oklahoma Department of Libraries (ODL) to carry out its mission as a responsible state agency; sharing of library resources--materials and staff specialists--for more effective money budgeting;

improved communications between libraries and ODL; written objectives and needs assessment of users to improve library service to the community; direction and education for promotion of cooperative activities between all types of libraries; and investigation of different methods of cooperation in which all libraries can participate. A more in-depth analysis of needs and recommendations may be found in the complete report.

ED-157 548 Not available NTIS
Inglewood Public Library, CA.
Library Community Services,
Therese Correy. 1977, 99p
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$4.67, MF$0.83 Plus Postage.

Descriptors: *Community services, Evaluation, Futures(of Society), Guides, Illustrations, Library collections, Library programs, Library services, Occupational information, Organization, Physically handicapped, Publicize, *Public libraries, Senior citizens.

Services to the elderly, institutionalized, and physically and mentally exceptional, who are unable to use the public library in its traditional form, are described in this guide to programs at the Inglewood (California) Public Library. Topics include: (1) overall library goals and activities; (2) functional and organizational structure of community services, internal relationships, and job descriptions; (3) Talking Book Service for the visually and/or physically handicapped--history, eligibility, registration procedures, sample forms, book selection, processing and circulation, equipment, service evaluation, and plans for additional service; (4) Braille book collection--history, selection, ordering, and circulation; (5) history of the brailler writing machine, charge out procedures, and users; (6) large print collection--selection, publishers, ordering and cataloging, shelving, circulation and the large print book catalog at the library; (7) extramural services (collections housed outside the library for those unable to visit)--collections, selection, processing and routing, audio materials, maintenance, and problems; (8) proposed service to shut-ins--organization, volunteers, shut-in eligibility, equipment and materials, procedures and reports, sample forms, and a booklet on guidelines to service; (9) additional programs for special patrons and publicity for them; and (10) plans for future development. Also included is a list of resources--books, periodicals, circulars, and films--of interest to others serving the community.

ED-157 551 Not available NTIS
Library of Congress, Washington, DC.
The Library of Congress, 1977. A Brief Summary of Major Activities for the Fiscal Year Ending September 30, 1977.
1978, 30p
For related document, see IR 006 295.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$2.06, MF$0.83 Plus Postage.

Descriptors: Activities, Cataloging, Copyrights, Exhibits, Facilities, Government publications, Library acquisition, Library automation, Library networks, *Library programs, *Library services, Preservation, Special services, Tables(Data).
Identifiers: *Library of Congress.

A summary of statistical information and user service programs provided by the Library of Congress (LC) during the 1977 fiscal year is presented. The Library's Congressional Research Service (CRS) provides immediate response to research queries from members of Congress, as well as undertaking special studies and research projects and holding seminars, workshops, and briefings on public policy issues. LC's computerized information retrieval system, SCORPIO, provides current legislative materials, abstracts of congressional bills, and bibliographies of special materials, and the Major Issues System of CRS prepares special reports and studies on key issues. Services to other libraries include acquisitions and cataloging; a networking study defining LC's role in the emerging national network; and preservation activities, including the publication of a brochure and research into new preservation methods. Services to the general public include answering of research and reference questions with the backup of an extensive research collection; special services to the blind and physically handicapped; a new research facility to open in February 1979 for scholars and artists in the performing arts; dissemination of information regarding copyright laws; the American Folklife Center; and exhibits and public programs. Space problems at LC are briefly described, and tables illustrate the growth of space needed from 1900-1980 and the composition of the library collections in 1976-77.

NTIS/PS-79/0407/1GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
User Needs in Documentation and Information. Volume 2. 1977-April, 1979 (A Bibliography with Abstracts).
Rept. for 1977-Apr 79,
Mary E. Young. May 79, 171p*
Supersedes NTIS/PS-78/0431, NTIS/PS-77/0431, NTIS/PS-76/0325, and NTIS/PS-75/189. See also Volume 1, 1964-1976, NTIS/PS-78/0430.

Descriptors: *Bibliographies, *User needs, *Information systems, Information retrieval effectiveness, Data storage, Data retrieval, Acceptability, Computer programming, Requirements.

Reports on meeting the needs of the information sciences user in the most direct and specific way are cited, including methods used to determine those needs and measures taken to fulfill them in application to educational resources, data bases, data management, library networks, photographic recording systems, technical information centers, and consulting services. (This updated bibliography contains 163 abstracts, 58 of which are new entries to the previous edition.)

NTISUB/E/133 Subscription
Naval Research Lab., Washington, DC.
Report of NRL Progress, 1979.
Monthly repts.
1979, 12 issues
Paper copy available on subscription, North American Continent price $50.00/year; all others write for quote. Also available in single copies.

Descriptors: *Naval research, Radioactive contaminants, Monitoring, Entropy, Feasibility, Hydrogen fluoride, Technology, Acoustics, Plasmas(Physics), Electromagnetic scattering, Thermal expansion, Insulators, Excitations, Erbium, Cobalt, Stainless steel, Surfaces, Magnetic fields, Tests, Design criteria, Fatigue(Materials), Crack propagation, Precipitation(Chemistry), High temperature tests, Eutectics, Aluminum oxide.
Identifiers: Magnetic shielding, Air pollution detection, Hydrogen masers.

Contents:
Chemistry;
Communications sciences;
Electronics technology;
Material science and technology;
Plasma physics;
Radiation technology;
Space systems;
Underwater sound reference;
Papers by NRL staff members;
Patents.

N79-19931/1GA PC **A02**/MF **A01**
Kentucky Univ., Lexington. Center for Public Affairs.
NASA-UK Stap: A Technology Applications Program to Aid Government and Industry in Kentucky.
Annual Report.
1978, 13p
Subm-Sponsored by NASA.

Descriptors: *Information systems, Kentucky, *NASA programs, Technology transfer, Economic analysis, Industries, Information dissemination, Project planning, Universities.
Identifiers: Information centers, University of Kentucky, Scientific research.

For abstract, see STAR 1710

PB-290 776/4GA PC **E06**/MF **E06**
National Technical Information Service, Springfield, VA. Information Analysis Branch.
Health Care Microthesaurus - A Hierarchical List of Indexing Terms Used by NTIS.
Data base reference aid.
Apr 79, 48p*

Descriptors: *Health, *Thesauri, Subject indexing terms, Terminology, Words(Language), Data retrieval.
Identifiers: *Health care.

The microthesaurus was prepared by NTIS to help NTIS data base users retrieve health care related reports and to provide an indexing vocabulary for the health care information community. More than 900 main terms and their hierarchies are listed, expressing health care concepts including those for health care costs, education, delivery, and occupations. Also included are terms covering resources, manpower, technology, services, use, and legislation. In some instances a short definition has been provided to clarify a special use of a term by NTIS.

PB-293 140/0GA PC **A16**/MF **A01**
Jain (T. C.), New Delhi (India).
Survey of Indian Agro-Bio-Economic and Allied Literature, 1947-1975. A Bibliography. Volume I - Classified Part,
T. C. Jain. c1978, 364p
See also Volume 2, PB-293 141. Sponsored in part by Agency for International Development, Washington, DC.

Descriptors: *Social sciences, *Agriculture, *Bibliographies, *India, *Economics, Farm crops, Farm processing, Agricultural products, Soil conservation, Irrigation, Agricultural economics, Agricultural engineering, Agronomy, Rural areas, Social change, Community development, Political science, Public administration, Education, Mathematics, Chemistry, Oceanology, Geology, Biology, Medicine.
Identifiers: Villages, Developing country application.

This volume is a comprehensive record of Indian publications on the subject of agriculture and agricultural sciences, social sciences, physical sciences, medicine, and economics. The 5000 entries included in the volume represent books, monographs, mimeographed studies, serials, and continuations, series publications, and significant pamphlets. The classified part, which is the entirety of this volume, is designed for the subject approach and is grouped according to the universal decimal classification scheme (UDC B.S. 1000B; 1958 with expanded schedules).

PB-293 141/8GA PC **A99**/MF **A01**
Jain (T. C.), New Delhi (India).
Survey of Indian Agro-Bio-Economic and Allied Literature, 1947-1975. A Bibliography. Volume 2 - Author Part, Title Part and Directory of Publishers,
T. C. Jain. c1978, 640p
See also Volume 1, PB-293 140. Sponsored in part by Agency for International Development, Washington, DC.

Descriptors: *Social sciences, *Agriculture, *Bibliographies, *India, *Economics, Farm crops, Farm processing, Agricultural products, Soil conservation, Irrigation, Agricultural economics, Agricultural engineering, Agronomy, Rural areas, Social change, Community development, Political science, Public administration, Education, Mathematics, Chemistry, Oceanology, Geology, Biology, Medicine.
Identifiers: Villages, Developing country application.

This volume is the continuation of the comprehensive record of Indian publications. The bulk of this volume is devoted to three areas: the author part, the title part, and a directory of publishers. The author part includes appropriate cross-references to variant forms of names. The title part combines extensive cross-references to alternative forms of titles. Each entry in all three parts contains the following information: author, title, place of publication and the publisher's name, year of publication, number of pages, size, and the price.

PB-293 170/7GA PC **A04**/MF **A01**
National Bureau of Standards, Washington, DC.
Data Bases Available at the National Bureau of Standards Library,
Diane Cunningham. Mar 79, 53p NBSIR-78-1577

Descriptors: Information systems, National government, Directories.
Identifiers: Listings, *Data bases, *National Bureau of Standards, US NBS, On line systems.

This report is a listing of data bases available online at the National Bureau of Standards (NBS) Library. The list is alphabetical by either the acronym or the full title of the data base, whichever is most commonly used. This section includes such information as name of data base, dates of coverage, brief description of the data base, the principal sources employed in forming the data base information, the producer(s) of the data base, the corresponding hard copy, and the vendor(s) who distribute the various data bases. A list of vendors with addresses and telephone numbers precedes the data base list. The General Subject Index, which follows the list of data bases, is arranged alphabetically by broad subject categories with references to the corresponding data bases. The Cross Reference Index lists variant forms of the names of the data bases in the left hand column with cross references to the name of the data bases used in this report on the right.

PB-293 270/5GA PC **A07**/MF **A01**
Washington State Office of Financial Management, Olympia. Statistical Analysis Center.
Criminal Justice Literature in the State of Washington,
Kathleen M. Puziak. May 78, 142p
Sponsored in part by National Criminal Justice Information and Statistics Service, Washington, DC.

Descriptors: *Criminal justice, *Bibliographies, *Washington(State), Periodicals, Correctional institutions, Courts of law, Juvenile delinquency, Police, Law enforcement, Drug abuse, Alcoholism, Child abuse.

The report identifies criminal justice literature available in the State of Washington which concerns the State of Washington. Criminal justice includes corrections, the courts, juvenile delinquency, drugs and alcoholism, and any peripheral areas. The bibliography is intended for a broad audience and is arranged to try and satisfy various needs. Entries are arranged by large category headings for ease of browsing. There are two indexes to allow access in a more specific manner: one index is by author/main entry and the other is a keyword (subject) index. These indexes use an item entry number to refer back to the main body of entries. The scope is limited to the past five years: 1973-1978, and includes books, reports, studies, information systems, and audiovisual materials.

PB-293 297/8GA PC **A08**/MF **A01**
Bureau of Mines, Washington, DC.
List of Bureau of Mines Publications and Articles, January 1 to December 31, 1977, with Subject and Author Index.
Special pub.,
Shelby Z. Palya. 1978, 155p* BUMINES-SP-2-79
See also report dated 1977, PB-275 483.

Descriptors: *Mining, *Mining engineering, *Bibliographies, Abstracts, Indexes(Documentation.

The list summarizes publications by Bureau authors published in the regular Bureau of Mines series; in scientific, technical, or trade journals; or in other media. Those available from the Bureau of Mines are indicated. Patents issued to Bureau personnel are also listed, and instructions are given on how to apply for permission to use them. An outstanding feature of this Special Publication is an exhaustive subject and author index.

PB-293 380/2GA PC **A09**/MF **A01**
Patent and Trademark Office, Washington, DC. Office of Technology Assessment and Forecast.
Technology Assessment and Forecast Report (9th).
Mar 79, 191p*
See also 8th report dated Dec 77, PB-276 375.

Descriptors: *Patents, *Technology assessment, *Economic surveys, Information systems, Forecasting, Economic development, Technology, Tables(Data), Foreign countries, Trends, Exploration.
Identifiers: *Patenting, Foreign inventors.

The Patent and Trademark Office has assembled one of the largest collections of technological literature in the world--the classified patent search file which contains twenty two million technological documents distributed among 100,000 subdivisions of technology. In its most general terms, the mission of the program is to stimulate and enhance the use and usability of the patent file, and to assemble, analyze and make available meaningful data about the file. In carrying out this mission, the Office of Technology Assessment and Forecast (OTAF), which administers the program, has assembled and built a master data base covering all U.S. patents. It periodically updates this base and strives continually to add new data items to it. OTAF uses the data base in two principal ways: First, it periodically issues general distribution publications. The second principal use of the OTAF data base is made in the preparation of special reports, tailored to individual needs. These reports, which are provided on a cost reimbursable basis, have been utilized by other government agencies and a number of private sector organizations.

PB-293 443/8GA PC **A04**/MF **A01**
Lake Champlain Basin Study, Burlington, VT.
Bibliography of Environmental Studies on Lake Champlain.
Final technical rept.,
Paul R. Vachon. Aug 78, 58p LCBS-27
Report on Lake Champlain Basin Study.

Descriptors: *Research projects, *Lake Champlain Basin, *Bibliographies, Aquatic biology, Benthos, Aquatic plants, Biological productivity, Fisheries, Erosion, Limnology, Water pollution, Wildlife, Sediments, Fishing, Watersheds, New York, Vermont.

The purpose of this bibliography is to list and describe the nature of selected past and current environmental studies relevant to Lake Champlain and its drainage basin. This report consolidates several unpublished reference documents. The bibliography can be considered complete in so far as it covers regionally significant studies, and major sponsored research projects. Some of the subject areas covered are: Aquatic biology; fisheries, limnology, water pollution, and resource management.

PB-293 549/2GA PC **A07**/MF **A01**
Texas State Library, Austin. Public Services Dept.
Directory of Data Base Resources in Texas State Government.
1978, 150p

Descriptors: *Information systems, *Texas, *Directories, Costs, Availability, State government, Libraries.
Identifiers: Data bases.

The information about data bases in this directory was obtained from questionnaires sent to Texas state agencies by the Texas State Library and returned from June through October 1977. It includes data compiled by the state agencies as well as commercial data bases accessed by them. The descriptions are brief and are arranged in broad subject areas. Data base names are listed in the index as are their abbreviations and acronyms and the specific subjects covered.

PB-293 611/0GA PC **A20**/MF **A01**
Control Analysis Corp., Palo Alto, CA.
AMOEBA: System Documentation.
Jan 79, 469p HCFA/OPPR-79/04
Contract SRS-500-76-0008
See also PB-293 612.

Descriptors: *Medicaid, *Auditing, *Information systems, Billing, Data processing, Requirements, Programs, Management information systems.
Identifiers: *Claims review, Health care utilization, Automated Medicaid Overutilization and Erroneous Billings Auditor, AMOEBA(Automated Medicaid Overutilization and Erroneous Billings Auditor).

The volume is concerned with the system documentation of the system known as Automated Medicaid Overutilization and Erroneous Billings Auditor (AMOEBA). The reader is assumed to be familiar with AMOEBA: General Concepts and User's Guide (see HCFA/OPPR 77/19). In particular Section I-2 in that manual, 'Overall Description of the System,' should be reviewed. The AMOEBA system has been designed with a certain programming philosophy in mind, some of the elements of which are: (a) to use a modular approach; (b) to have data and paragraph names be as descriptive as possible; (c) to have extensive internal error checking, e.g., sequence checks on all records read or written; control totals being checked between files where possible, for all files processed; checks for table overflows; (d) to have only one read or write statement for any file in each program; (e) to detect errors as early as possible; (f) to use a 'minimum action law', where program modifications are possible or likely, so that a change which may affect many program statements can be implemented by changing just a few statements.

PB-293 612/8GA PC **A03**/MF **A01**
Control Analysis Corp., Palo Alto, CA.
AMOEBA: System Review Guide.
Jan 79, 31p HCFA/OPPR-79/05
Contract SRS-500-75-0008
See also PB-293 613.

Descriptors: *Medicaid, *Auditing, *Information systems, Billing, Data processing, Oregon, New York, Connecticut, Massachusetts, Iowa, Requirements, Programs, Management information systems.
Identifiers: *Claims review, Health care utilization, Automated Medicaid Overutilization and Erroneous Billings Auditor, AMOEBA(Automated Medicaid Overutilization and Erroneous Billings Auditor).

The volume is a review of the system known as Automated Medicaid Overutilization and Erroneous Billings Auditor (AMOEBA). The AMOEBA system consists of three major parts: the interface programs (AEZ) that convert state data into a standard form for use by the other AMOEBA programs; the edit programs (AEH) that look at individual claims to find conflicts between claims in a recipient's history; and the utilization programs (AEU) that summarize the data on a provider's practice and compare him with his peers. In addition, there are programs that prepare reports directly from the standard AMOEBA file, and a variety of subroutines used by the main programs to carry out subsidiary processes. The majority of programs in the AMOEBA system do not change significantly from state to state, except for copy library members. Differences in the individual state systems arise in three places.

PB-293 613/6GA PC **A06**/MF **A01**
Control Analysis Corp., Palo Alto, CA.
AMOEBA: General Concepts and User's Guide.
Apr 77, 114p HCFA/OPPR-77/19
Contract SRS-500-75-0008
See also PB-293 612.

Descriptors: *Medicaid, *Auditing, *Information systems, Billing, Data processing, Requirements, Programs, Management information systems.
Identifiers: *Claims review, Health care utilization, Automated Medicaid Overutilization and Erroneous Billings Auditor, AMOEBA(Automated Medicaid Overutilization and Erroneous Billings Auditor).

The volume gives the General Concepts and a User's Guide for the system known as Automated Medicaid Overutilization and Erroneous Billings Auditor (AMOEBA). AMOEBA is a package of computer programs that was developed by Control Analysis Corporation and was field tested in the state of Oregon. AMOEBA performs two separate and important functions: (1) It generates utilization profiles giving statistical analyses of an individual provider's practice, including ranking reports used to select exceptional providers; (2) It scans all recipient histories searching for conflicting claims, as specified by State personnel at run time. These conflicts include a wide variety of possible duplicates, and an almost limitless range of conflicts, such as surgical follow-up care, excessive visits of any specified type, lab profiles billed separately, conflicting dental work, dangerous combinations

of drugs, overuse of drugs, etc. AMOEBA was written in COBOL for an IBM installation. Implementation of the package would be feasible, but more difficult, on alternative computer systems.

PB-294 264/7GA PC **A09**/MF **A01**
Bangladesh National Scientific and Technical Documentation Centre, Dacca.
Current Scientific and Technological Research Projects in the Universities and Research Institutions of Bangladesh,
M. Q. Islam, M. O. Ghani, M. S. A. Khan, Nasera Begum, and Nasiba Khatun. 1978, 193p
BANSDOC-BIBLIO-135
Sponsored in part by Agency for International Development, Washington, DC.

Descriptors: *Research projects, *Bangladesh, *Directories, Universities, Agriculture, Social sciences, Medicine, Industries.
Identifiers: Developing country application.

The directory is a comprehensive listing of the research activities of the Universities and Research Institutions of Bangladesh. Through this publication, a researcher can avoid duplication by being informed of the research presently being done or research that has been done by a particular agency on a particular problem or problems in the country of Bangladesh.

5C. Economics

BTHE-020333 PC**$46.00**
British Standards Institution, Hemel Hempstead (England). Technical Help to Exporters.
Electrical Equipment Certification in the Federal Republic of Germany (Second Edition).
c1979, 56p* ISBN-0-905877-60-8
Supersedes BTHE-020316.
Price to members $34.00.

Descriptors: *Technical assistance, *Electric equipment, *Safety, *Exporting, Standards, Regulations, Test facilities, West Germany, Great Britain, Radiofrequency interference, Suppressors.

The survey describes the most widely used schemes and procedures for the certification for both safety and radio interference suppression of electrical equipment that is intended to be sold and/or used in the Federal Republic of Germany. It excludes schemes and procedures relating to flammable atmospheres (e.g. mines, petrol refineries).

HRP-0025389/8GA Not Available NTIS
Kentucky Univ., Lexington. Coll. of Social Professions.
Estimating Costs for Community Services.
Elizabeth Crowell. 1978, 3p
Grant PHS-MH-00180
Pub. in Social Work v23 n2 p159-161 Mar 78.

Descriptors: Economics, *Health care costs, Health care, Health economics, Measurement, Methodology.

The assignment of unit costs to community health service activities was investigated to suggest possible ways of overcoming the difficulties involved in estimating costs for community services. The dilemma is expressed as whether administrators of community health programs should vie for budgetary allocations based on number of direct service clients or comply with community demands to supply indirect, preventive health services. With the first approach, funding sources that base their allocations primarily on the number of clients served force agencies to recruit clients and emphasize the provision of direct service. With the second approach, special interest groups, educational institutions, public officials, and taxpayers demand implementation of preventive measures in the hope of eventually reducing public program costs. However, staff time and resources devoted to indirect services may reduce the number of clients and thus future funding, or if they refuse demands for educational and informational services their agency's public image may suffer. Unit costs may be calculated for community services that relate both direct and indirect services to funding available, so that indirect service clients do not effectively detract from direct client-based funding formulas. In conclusion, it is recommended that community health service administrators account for and test the impact of preventive services over time to justify funding formulas based on both direct and indirect services.

HRP-0027951/3GA Not Available NTIS
American Hospital Association, Chicago, IL. Office of Program and Policy Development.
Does Money Spent on Health Care Really Improve U.S. Health Status.
David F. Drake. 1978, 3p
Pub. in Hospitals, Jnl. of the American Hospital Association v52 n20 p63-65 16 Oct 78.

Descriptors: Economics, Elderly persons, Financing, *Health care costs, Health care delivery, Health care services, Health care, Health economics, Health insurance, Health resources, Personal health services, *Prepaid health care, Public health insurance, United States.

A discussion is presented of whether or not increased expenditures for health care significantly improve the overall health of the population of the United States. It is pointed out that in the 1930's and 1940's, there was a large reduction in age-adjusted death rates in the United States. The period from 1936 to 1954 has been identified as the period during which the United States achieved a greater decrease in its death rate than in any other period of its history. It is pointed out that it was not until the 1970's that the rate of decrease in death rates rose to levels comparable to the period when antibiotics were introduced. It is further noted that after the establishment of the Medicare program, financial barriers to access to health care for the aged were removed. As a result, health care utilization patterns for the elderly were substantially altered. Institutional health care utilization by the aged was substantially increased. The changed health status of the elderly between 1965 and 1975 is said to represent the most significant improvement in the health of the elderly during any decade in U.S. history. During this period, the death rate fell 11.2 percent. It is concluded that health care does, indeed, make a difference in health.

HRP-0900269/2GA PC **A07**/MF **A01**
Bureau of Health Manpower, Hyattsville, MD. Program Management Information Systems Section.
Construction Grants for Educational Facilities, Fiscal Years 1965-77.
Feb 78, 150p

Descriptors: Allocations, *Financing, Funds, Health care delivery systems, Health legislation, *Health manpower education, Health resources, Law(Jurisprudence), Loans, Local government, National government, Projects, *Public facilities, State government.

Statistics on construction assistance awarded from 1965 to 1977 by the Bureau of Health Manpower to schools of medicine, osteopathy, dentistry, optometry, pharmacy, podiatry, veterinary medicine, public health, nursing and allied health as well as to medical libraries and health research facilities are presented. Legislation authorizing assistance grants is summarized. From 1965 to 1977, medical schools received 830.2 million dollars (66.7 percent of funds to health professions), dental schools, 246.9 million dollars (19.8 percent of funds), 289 nursing schools, 163.3 million dollars, and 184 allied health professions training institutions, 212.6 million dollars. Thirty-six tables present data on the number and amount of construction fund grants awarded by DHEW regions, type of training, fiscal year and status of each school; grant data on awards to health professional schools, nursing schools, and allied health professions facilities; and a list of guaranteed Federal construction loans. A map of DHEW regions and three figures are furnished.

NTISUB/E/130 Subscription
Energy Information Administration, Washington, DC.
Monthly Petroleum Statistics Report, 1979.
Monthly repts.
1979, 12 issues*
Paper copy available on subscription, North American Continent price $50.00/year; all others write for quote. Also available in single copies.

Descriptors: *Petroleum products, *Crude oil, *Commerce, Gasoline, Fuel oil, Distillates, Aviation fuels, Jet engine fuels, Kerosene, Residual oils, Natural gas liquids, Imports, Petroleum refining, Stockpiles, Petroleum industry, Demand(Economics), Tables(Data), Statistical data.

The Petroleum Statistics Report is a series of monthly publications developed from data collected under the Department of Energy (DOE) Petroleum Reporting System. Included are statistics on: Total domestic demand for products; Imports of refined products; Crude oil domestic production; Net imports of crude oil and products; Crude oil runs to stills; End stocks of crude oil and selected products; Selected product production; Product apparent demand (Except unleaded motor gasoline); Unleaded motor gasoline apparent demand.

NTISUB/E/152 Subscription
Energy Information Administration, Washington, DC.
Petroleum Market Shares, 1979.
Monthly repts.
1979, 12 issues*
Paper copy available on subscription, North American Continent price $30.00/year; all others write for quote. Also available in single copies.

Descriptors: *Petroleum products, *Market research, Gasoline, Aviation fuels, Fuel oil, Residual oils, Jet engine fuels, Distillates, Sales, Market surveys, Propane, Economic surveys, Tables(Data), Statistical data.
Identifiers: Market shares.

This is one of a continuing series of reports of monitored monthly changes in the refiner sales distribution and the retail market shares of selected refined petroleum products. Estimates of volume sales and market shares are based on monthly sample surveys of refiners and independent marketers.

NTISUB/E/156 Subscription
Energy Information Administration, Washington, DC.
Monthly Petroleum Product Price Report, 1979.
Monthly repts.
1979, 12 issues*
Paper copy available on subscription, North American Continent price $45.00/year; all others write for quote. Also available in single copies.

Descriptors: *Petroleum products, *Market research, Gasoline, Distillates, Residual oils, Fuel oil, Aviation fuels, Kerosene, Petrochemical feedstocks, Liquefied petroleum gases, Diesel fuels, Heating fuels, Prices, Economic surveys, Market surveys, Tables(Data), Statistical data.

As part of its role in monitoring market price trends, the Energy Information Administration (EIA) collects pricing data on refined petroleum products from refiners, large resellers, gas plant operators, gasoline retailers, and truckstop operators. This report provides national weighted average prices of petroleum products on a monthly basis at different levels of the marketing chain. In addition to recent price data, some historic data are included to indicate trends.

NTISUB/E/285-015 PC**$5.25**
Central Intelligence Agency, Washington, DC.
Economic Indicators Weekly Review.
Weekly rept.
13 Apr 79, 26p ER-EI-79/015
See also report dated 6 Apr 79, NTISUB/E/285-014.
Paper copy also available on subscription, North American Continent price $60.00/year; all others write for quote.

Descriptors: *Economic factors, *Foreign countries, *United States, Periodicals, Developing countries, Japan, West Germany, France, Great Britain, Italy, Canada, Prices, Agricultural products, Commerce, Inflation, Unemployment, Exports, Production, Industries, Charts, Tables(Data), International trade, Economic conditions.

The Review provides up-to-date information on changes since 1974 in the domestic and external economic activities of the major non-Communist developed countries and selected developing countries. It consists of a combination of charts and tables. The charts depict (a) economic indicators (industrial production, unemployment, and consumer price inflation), both composite and by country, for the Big Seven developed countries (United States, Japan, West Germany, France, United Kingdom, Italy, and Canada); (b) foreign trade and foreign trade prices for the Big Seven; and (c) monthly average prices for selected agricultural products and industrial materials. The tables list recent and chronologically comparative data for direction of trade and for 13 items of economic interest for the Big Seven plus data for seven items of economic interest for selected developing countries.

NTISUB/E/285-016 PC**$5.25**
Central Intelligence Agency, Washington, DC.
Economic Indicators Weekly Review.
Weekly rept.
20 Apr 79, 26p ER-EI-79/016
See also report dated 13 Apr 79, NTISUB/E/285-015.
Paper copy also available on subscription, North American Continent price $60.00/year; all others write for quote.

Descriptors: *Economic factors, *Foreign countries, *United States, Periodicals, Developing countries, Japan, West Germany, France, Great Britain, Italy, Canada, Prices, Agricultural products, Commerce, Inflation, Unemployment, Exports, Production, Industries, Charts, Tables(Data), International trade, Economic conditions.
Identifiers: *Economic indicators, *Noncommunist countries.

The Review provides up-to-date information on changes since 1974 in the domestic and external economic activities of the major non-Communist developed countries and selected developing countries. It consists of a combination of charts and tables. The charts depict (a) economic indicators (industrial production, unemployment, and consumer price inflation), both composite and by country, for the Big Seven developed countries (United States, Japan, West Germany, France, United Kingdom, Italy, and Canada); (b) foreign trade and foreign trade prices for the Big Seven; and (c) monthly average prices for selected agricultural products and industrial materials. The tables list recent and chronologically comparative data for direction of trade and for 13 items of economic interest for the Big Seven plus data for seven items of economic interest for selected developing countries.

NTISUB/E/285-017 PC**$5.25**
Central Intelligence Agency, Washington, DC.
Economic Indicators Weekly Review.
Weekly rept.
27 Apr 79, 26p ER-EI-79/017
See also report dated 20 Apr 79, NTISUB/E/285-016.Color illustrations reproduced in black and white.
Paper copy also available on subscription, North American Continent price $60.00/year; all others write for quote.

Descriptors: *Economic factors, *Foreign countries, *United States, Periodicals, Developing countries, Japan, West Germany, France, Great Britain, Italy, Canada, Prices, Agricultural products, Commerce, Inflation, Unemployment, Exports, Production, Industries, Charts, Tables(Data), International trade, Economic conditions.
Identifiers: *Economic indicators, *Noncommunist countries.

The Review provides up-to-date information on changes since 1974 in the domestic and external economic activities of the major non-Communist developed countries and selected developing countries. It consists of a combination of charts and tables. The charts depict (a) economic indicators (industrial production, unemployment, and consumer price inflation), both composite and by country, for the Big Seven developed countries (United States, Japan, West Germany, France, United Kingdom, Italy, and Canada); (b) foreign trade and foreign trade prices for the Big Seven; and (c) monthly average prices for selected agricultural products and industrial materials. The tables list recent and chronologically comparative data for direction of trade and for 13 items of economic interest for the Big Seven plus data for seven items of economic interest for selected developing countries.

N79-19451/0GA PC **A06**/MF **A01**
Technical Marketing Associates, Inc., Concord, MA.
Market Definition Studies for Photovoltaic Highway Applications.
Dec 78, 121p NASA-CR-159477, DOE/NASA/0040-78/1
Contracts DEN-3-40, DE-A101-79ET20485

Descriptors: *Lighting equipment, *Market research, *Photovoltaic cells, *Solar cells, Economic analysis, Highways, Social factors, Technology utilization.
Identifiers: Design, Houses, Solar space heating, Solar water heating.

For abstract, see STAR 1710

PB-293 034/5GA PC **A07**/MF **A01**
Virginia Center for Coal and Energy Research, Blacksburg.
MIDAS: Mineral Development and Supply Model of the US Aluminum Industry from Mineral to Wire. Volume II. Systems' Design and Data Specification.
Final rept.,
W. R. Hibbard, Jr., M. A. Kelly, L. A. Rapoport, M. W. Rohrer, and A. L. Soyster. 31 Dec 78, 131p NSF/RA-780482
Grant NSF-DAR77-12539
See also Volume 1, PB-293 035.

Descriptors: *Aluminum industry, *Economic models, Supply(Economics), Demand(Economics), Investments, Operating costs, Descriptions, Systems engineering, Systems analysis, Data processing, Programming languages, Tables(Data), Relations(Mathematics), Specifications.
Identifiers: *Industrial structure, Data files, Mathematical concepts.

The volume contains the mathematical relationships, data development, and system features of the MIDAS aluminum model. Since the model contains 3070 rows and 9265 columns, a reasonably sophisticated mnemonic structure is a necessity. The column and row names used to identify the activities are described. All the rows in the model are categorized into 39 classes. The actual data used in the model is included in the computer file as shown. Since this computer data file consists of a series of tables with rather abbreviated titles, the principal data components are described. The main system features for storing data, generating matrices and solutions, as well as generating reports, are outlined. The MIDAS model accomplishes these tasks with the use of special programming languages known as Dataform and MPS-3. A copy of the entire computer file is given. Certain mathematical techniques for determining the present value of investment and operating costs as well as time lags and concomittant availabilities of new facilities are described.

PB-293 035/2GA PC **A09**/MF **A01**
Virginia Center for Coal and Energy Research, Blacksburg.
MIDAS: Mineral Development and Supply Model of the US Aluminum Industry from Mineral to Wire. Volume I. Industry Structure, Model Development and Findings.
Final rept.,
W. R. Hibbard, Jr., M. A. Kelly, L. A. Ropoport, M. W. Rohrer, and A. L. Soyster. 31 Dec 78, 183p NSF/RA-780481
Grant NSF-DAR77-12539
See also Volume 2, PB-293 034.

Descriptors: *Aluminum industry, *Economic models, Supply(Economics), Demand(Economics), Prices, Elastic properties, Bauxite, Aluminum, Electric power, Expenses, International trade, Investments, Mineral deposits, Mineral economics, Methodology, Economic forecasting, Operating costs.
Identifiers: *Industrial structure, Case studies.

A model representative of the aluminum industry is developed as a complete time-dynamic system in order to determine optimal trends under predetermined scenarios. The model's applicability and flexibility are discussed and its capability is demonstrated by examining some basic cases. The aluminum industry, modelling assumptions and strategy, and technical development are discussed. The MIDAS Aluminum model has demonstrated versatility and flexibility in identifying the effects of: bauxite price, aluminum price elasticity, US electric power costs, US investment limits, and US and world demand. The methodology of modelling the supply-side of the United States is characterized in a prototype example. An evaluation of the demand sub-model used within the MIDAS framework is described. A sample model management report is included.

PB-293 205/1GA PC **A06**/MF **A01**
Mathematica Policy Research, Inc., Washington, DC.
Open-Ended Public Service Employment Programs: The JOBS Microsimulation Model.
Final rept. Mar 77-Jun 78,
Myles Maxfield, Jr. 19 Feb 79, 110p ASPER/CON-77/0043/A
Contract DL-J-9-M-7-0043

Descriptors: *Economic models, *Federal assistance programs, *Employment, National government, Manpower, Low income groups, Unemployment, Welfare, Economic assistance, Social welfare, Income, Regression analysis.
Identifiers: *Program for Better Jobs and Income, *Public service occupations, Unemployed, Labor force participation, Transfer payment, Leisure time.

The objective of the report is to construct a model of welfare programs which produces estimates of the budgetary costs and caseloads of alternative hypothesized programs. The first paper presents an overview of the project, including the main policy issues addressed, the principal features of the JOBS model, and the principal results of the model. A microsimulation model of employment-related welfare reform programs is constructed. The decision of eligible persons to apply for a public service employment job is the focus of the model. The decision is based on an explicit treatment of employment and income expectations and of the monetary value of nonmarket time. Estimates of the caseload of the Program for Better Jobs and Income (PBJI) are produced. The second paper discusses a specific application of the JOBS model to the administration's PBJI. The model computes transfer payments and predicts participation behavior of individuals and families and then aggregates program caseload by summing over the sample of microdata. Better Jobs and Income is estimated to increase cost by 75 percent relative to current AFDC, SSI, and Food Stamp programs. This estimate includes cash assistance for 15 million families and a public service employment program providing a full year equivalent of 1.7 million jobs. The third paper hypothesizes a model in which reservation wages are determined by the demand for leisure, the duration of employment, and home productivity. Results confirm the hypothesis. The predicted values are used in the microsimulation model. In the fourth paper, the model examines the determinants of the time allocated for men. The empirical analysis suggests that the market labor supply of men is very insensitive to nonmarket characteristics.

PB-293 257/2GA PC **A03**/MF **A01**
Southwest Educational Development Lab., Austin, TX.
A Theoretical Model of Segmented Youth Labor Markets and the School to Work Transition.
Final rept. Aug 78-Mar 79,
John Vrooman. Mar 79, 27p ASPER/CON-78/0116/A
Contract DL-J-9-M-8-0116

Descriptors: *Economic impact, *Education, *Youths, *Technology, Hypotheses, Abilities, Earnings, Income, Employment, Job analysis, Productivity, Skilled workers, Unskilled workers, Capital, Supply(Economics).

Identifiers: *Skills, Skill development, Labor market, Educational benefits.

The report develops a theoretical framework for the analysis of the effects of technologically induced labor market segmentation on the economic returns of such institutionally acquired forms of human capital as formal schooling and manpower training. The theory is a synthesis of advanced segmented labor market theory and theories of capital market bifurcation. The juxaposition of these theories result in the treatment of technology and innovation as endogeneous sources of labor market segmentation. The antecedents, hypotheses, and policy implications of this theory are expressed in such a manner as to facilitate their empirical analyses. The theory rests upon the hypotheses that labor markets are segmented by technology into sets of jobs which require different combinations of general and specific skills.

PB-293 262/2GA PC **A07**/MF **A01**
Washington Univ., St. Louis, MO. Dept. of Economics.
Static and Dynamic Labor Supply Functions.
Final rept.,
Edward Kalachek, and Fredric Raines. 30 Jun 78, 136p DLMA-21-29-73-49-1
Grant DL-21-29-73-49

Descriptors: *Manpower, *Supply(Economics), *Salaries, Males, Labor unions, Attitudes, Economic analysis, Employment, Federal assistance programs, Welfare, Psychology, Personnel selection, Regression analysis, Occupational mobility, Functions(Mathematics), Personality.
Identifiers: *Labor supply, Leisure time, Industrial structure, Labor economics, Labor market.

The study examines for mature men the determinants of wage differences, of labor supply and of labor supply change, utilizing NLS data. The analysis stresses the distinction between the permanent and transitory components of wages, and differential responses to these coefficients. It finds that: personality, attitudinal and psychological characteristics affect wages; that workers with the same human capital receive substantially different wages; that this affects quits, layoffs, the duration of unemployment and hiring standards; that labor supply responds positively to the permanent and negatively to the transitory component of wages; that the use of measured wages in labor supply regressions leads to misleading results; and that workers adjust labor input rapidly when their leisure-income choices alter.

PB-293 319/0GA PC **A05**/MF **A01**
Massachusetts Univ., Amherst. Univ. Center for Economic Development.
A Program of Technical Assistance for Economic Development in Massachusetts.
Final rept. 15 Mar 77-31 Aug 78.
Mar 79, 76p EDA-79-030
Grant EDA-01-6-01529

Descriptors: *Economic development, *Technical assistance, *Community development, Businesses, Industries, Communities, Employment, Universities, Services, Massachusetts.
Identifiers: Job creation.

The University Center for Economic Development at the University of Massachusetts established on March 15, 1977, is a unit devoted to public service and research within the Institute at the University. The objective for establishing the UCED was to mobilize the resources of the University related to the various aspects of community economic development to assist in creating new jobs and saving existing jobs through a program of technical assistance to business, industry and communities. Assistance is provided for the establishment of new industry and for the exploration of, and penetration into, new markets.

PB-293 340/6GA PC **A04**/MF **A01**
National Committee on International Trade Documentation, New York.
U.S. International Trade Document Standardization. Use of Aligned Forms in Export and Import Trade.
Final rept. Sep 77-Feb 79,
Feb 79, 66p* DOT/RSPA/DPB-40/79/1
Contract DOT-OS-70101

Descriptors: *International trade, *Documents, *Standardization, Records management, Exports, Imports, Instructions, Guidelines, Forms(Paper).

The National Committee on International Trade Documentation has prepared for the Department of Transportation, Office of Facilitation, a report providing guidance to the trading community on the use of aligned forms to facilitate the documentation of shipments in the export and import trade of the United States. The intent of this project was to present in an orderly fashion in a single publication descriptions and illustrations of the principal documents used in export and import trade, together with detailed instructions on their preparation that will enable users to obtain the benefits of the aligned system of aligned documentation based on a standard format, the United States Standard Master for International Trade.

PB-293 399/2GA PC **A13**/MF **A01**
Roberts and Associates, Ocala, FL.
Feasibility Report for Ocala/Marion County Industrial Airpark at Ocala Municipal Airport, Jim Taylor Field.
Griff H. Roberts. cJun 78, 290p CPRC/C-79/09
Contract CPRC-10740056

Descriptors: *Industries, *Airports, Feasibility, Economic analysis, Projections, Site surveys, Employment, Compatibility, Planning, Evaluations, Florida.
Identifiers: Ocala Municipal Airport, Marion County(Florida), *Industrial parks.

The report contains a comprehensive analysis of Ocala/Marion County's economic and industrial activities, both past and present. It likewise, contains projections of future activities to the year 1990. Also included is a thorough analysis of other industrial airparks in Florida, and the ultimate objective of the report--a feasibility analysis concerning the development of an industrial airpark at the Ocala Municipal Airport/Jim Taylor Field. A complete review of the report reveals innumerable facts about the history of these economic and industrial activities, as well as their current status.

PB-293 540/1GA MF **A01**
Department of Commerce, Washington, DC.
Business America - The Journal of Industry and Trade. Volume II, Number 8, April 9, 1979.
Bi-weekly pub.
9 Apr 79, 50p
See also Volume 2, Number 6, PB-292 339.
Paper copy available from Supt. of Docs.

Descriptors: *Commerce, *Periodicals, Legislation, Exports, Government policies, Illinois, International trade, Marketing, Research.

Contents:
- New Congressional Reports Shape Trade Legislation;
- Guidelines for Locating Foreign Representatives;
- Foreign Industrial Production Declines in January;
- Reports Show Illinois Third in Foreign Sales;
- Business Outlook Abroad;
- Marketing Highlights;
- Domestic Business Report;
- Economic Highlights;
- Washington Trade Briefs;
- Worldwide Business Opportunitis.

PB-293 553/4GA PC **A04**/MF **A01**
Minnesota Dept. of Economic Development, St. Paul. Research Div.
Minnesota's Tourist-Travel Industry, 1977.
Apr 78, 54p RESEARCH BULL-43
Errata sheet inserted.

Descriptors: *Industries, *Travel, *Minnesota, Hotels, Parks, Air transportation, Automobiles, Airports, Skiing.
Identifiers: Tourism, Restaurants, Historical sites, *Tourist industry.

The document presents an economic analysis of the tourist and travel related industries.

PB-293 839/7GA PC **A03**/MF **A01**
National Center for Productivity and Quality of Working Life, Washington, DC.
Productivity Growth: Purpose, Process, Prospects, and Policy,
Solomon Fabricant. Jun 78, 33p

Descriptors: *Productivity, *Growth, United States, History, Economic analysis, Output, Industries, Comparison, Capital, Investments, Government policies, Production rate, Improvement, Prices, Employment.
Identifiers: Labor force, Gross national product.

The document provides an historical overview of productivity growth and fluctuations in the United States and examines the process by which productivity changes. It also discusses the broad range of policies for improving productivity and why natural policies must allow for the specific problems of individual industries.

PB-293 961/9GA PC **A02**/MF **A01**
Chamber of Foreign Trade of the German Democratic Republic, Berlin.
The German Democratic Republic's Economic/Technological Congress in the U.S.A. (1st). Lecture 1. The Economic and Scientific-Technological Potential of the German Democratic Republic, Some Trends of Development and Resulting Opportunities for Economic Relations with the United States,
Werner Lange. 1978, 16p
See also Lecture 2, PB-293 962. Prepared by Embassy of the German Democratic Republic, Washington, DC. Presented at 'Days of Engineering of the GDR'.
Also available in set of 16 reports PC E19, PB-293 960-SET.

Descriptors: *International trade, *Economic development, *Technology, *East Germany, United States, Industries, Trends, Foreign policy, International relations, Investments, Cooperation, Prices, Competition, Production, Manufacturing.

The report is one from a series of lectures presented in the United States during 1978. Each paper discusses, briefly, a particular topic detailing either industrial development or economic growth in the German Democratic Republic.

PB-293 962/7GA PC **A02**/MF **A01**
Chamber of Foreign Trade of the German Democratic Republic, Berlin.
The German Democratic Republic's Economic/Technological Congress in the U.S.A. (1st). Lecture 2. Management, Planning and Financing of the GDR's Foreign Trade,
Werner Polze. 1978, 20p
See also Lecture 1, PB-293 961, and Lecture 3, PB-293 963. Prepared by Deutsche Aussenhandelsbank A.G., Berlin (German D.R.). Presented at 'Days of Engineering of the GDR'.
Also available in set of 16 reports PC E19, PB-293 960-SET.

Descriptors: *International trade, *Financing, *Management, *East Germany, Planning, United States, Foreign policy, International relations, Legislation, Cooperation, Organizations, Government policies, Regulations, Banking business, Balance of payments.

The report is one from a series of lectures presented in the United States during 1978. Each paper discusses, briefly, a particular topic detailing either industrial development or economic growth in the German Democratic Republic.

PB-293 963/5GA PC **A02**/MF **A01**
Chamber of Foreign Trade of the German Democratic Republic, Berlin.
The German Democratic Republic's Economic/Technological Congress in the U.S.A. (1st). Lecture 3. Licensing Policy and Practice of the GDR: Overview of National Competence in Science and Technology,
Fritz Zschernig. 1978, 12p
See also Lecture 2, PB-293 962, and Lecture 4, PB-293 964. Prepared by Central Bureau for International License Trade of the German Democratic Republic, Berlin. Presented at 'Days of Engineering of the GDR'.

Also available in set of 16 reports PC E19, PB-293 960-SET.

Descriptors: *International trade, *Licenses, *Government policies, *East Germany, Economic development, United States, Foreign policy, International relations, Industries, Technology, Regulations, Contracts, Corporations, Technology innovation, Royalties.

The report is one from a series of lectures presented in the United States during 1978. Each paper discusses, briefly, a particular topic detailing either industrial development or economic growth in the German Democratic Republic.

PB-294 226/6GA PC **A25**/MF **A01**
Harvard Univ., Boston, MA. Graduate School of Business Administration.
Agribusiness Management for Developing Countries with Special Reference to the Central American Fruit, Vegetable and Floriculture Export Industries,
Ray A. Goldberg. 1973, 588p
Contract AID/csd-3153
Portions of this document are not fully legible.

Descriptors: *Commodity management, *Exports, *Developing countries, Agriculture, Education, Fruits, Vegetables, Plants(Botany), International trade, Market surveys, Consumption, Supply(Economics), Organization theory, Government policies, Transportation, Coordination.
Identifiers: *Agribusiness, Case studies, Commodity markets, Developing country application.

The purpose of the study is to provide a conceptual framework based on an agribusiness commodity system analysis that is believed to be useful to educators in Central America as they train future participants in Central American agribusiness. The chapter topics include: U.S. fruit and vegetable commodity system; the structure of the system; coordinating linkages between Central American exporters and the U.S. market for fruit and vegetables; Central American fruit and vegetable production for export; agribusiness education; and conclusions of the study. Included is a list of exhibits, a list of tables, and case studies.

PB-294 312/4GA PC **A02**/MF **A01**
Department of Housing and Urban Development, Washington, DC. Div. of International Affairs.
Establishing Savings and Loan Associations in Less Industrialized Countries.
Ideas and methods exchange,
Roy J. Burroughs. Mar 67, 16p IME-38
Sponsored in part by Agency for International Development, Washington, DC.

Descriptors: *Banks(Buildings), *Developing countries, Banking business, Housing planning, Savings, Capital, Investments, Housing surveys, Operating costs, Interest, Budgeting.
Identifiers: *Savings and loan associations, Financial services, Developing country application, Loans, Mortgages.

The paper is for use in countries participating in the technical cooperation program. It is intended to describe the methods now used to establish savings and loan institutions in the United States.

PB-294 605/1GA PC **A06**/MF **A01**
Colorado State Univ., Fort Collins. Dept. of Range Science.
REFLOW, Regional Economic Resource Simulation Model,
Donald A. Jameson, Linda S. Rollin, and Walter L. Stewart. Jan 77, 103p RANGE SCIENCE SER-24, NSF/RA-770764
Grant NSF-ERS72-03396

Descriptors: *Resource allocation, *Regions, *Investments, *Economic models, Economic impact, Natural resources, Exploitation, Populations, Forecasting, Production, Exports, Imports, Demand(Economics), Supply(Economics), Population growth, Population migration, Land use zoning, Employment, Regional planning, Water consumption.
Identifiers: Labor force participation, Input output analysis.

The purpose of the model is to provide a general methodology for examining how investment in any sector of sub-national region is reflected throughout the total regional economy, and how these economic changes influence the population and natural resource base of the region. The model is composed of driving or exogenous variables, an economic submodel based on traditional open input/output analysis, a population forecasting submodel, and two natural resource submodels (land zoning and water use) to act as regional resource constraints at each simulation time step. Procedures used include estimation of (1) gross outputs by sector, (2) exports by sector, (3) imports by sector, and (4) regional final demands. By modifying regional investments, the model can be used to relate exogenous economic changes to the region itself. In addition, regional dependence on outside suppliers (imports) may identify potential opportunities for business expansion within the region. Employment is displayed by sector and by occupation. The population model is used primarily to investigate the relationship between population change and economic change in the region and is, therefore, less detailed than many other population models. Dynamic population factors incorporated are births, deaths, in and out-migration and labor participation rates. Water and land submodels are designed to indicate when economic development would exceed specified land and water allocation constraints.

PB-294 615/0GA PC **A05**/MF **A01**
Alaska Univ., Fairbanks. Sea Grant Program.
An Investigation of Joint U.S./Foreign Ventures in the Developing Commercial Fishery in Alaska.
Final rept.,
Abby H. Gorham. Dec 78, 77p SEA GRANT-78-7, NOAA-79030502
Grant NOAA-04-8-M01-187

Descriptors: *Fisheries, *Alaska, Investments, Economic analysis, Benefit cost analysis, Manpower utilization, Commerce, Supply(Economics), Demand(Economics), Harvesting, Processing, Prices, Market research, Fishing, Economic models, Finance.
Identifiers: *Joint ventures, Research needs.

The report includes a systematic summary and economic analysis of seven joint venture proposals. It discusses the general conditions prevailing in the present market for groundfish and the investment decision-making process of the Gulf of Alaska groundfish industry. It provides a feasibility analysis of the harvesting and onshore processing of pollock and an examination of the costs and benefits of alternative development paths. An appendix introduces economic research needs as well as a supply response model which would be effective in determining investment response to alternative fishery policies as they apply to Alaska's groundfishery.

PB-294 634/1GA PC **A07**/MF **A01**
Alaska Univ., Fairbanks. Sea Grant Program.
An Evaluation of the Economic Feasibility of Pollock Processing in Southeast Alaska.
Master's thesis,
John Barrett Martin. Jan 79, 135p SEA GRANT-78-16, NOAA-79031605
Grant NOAA-04-8-M01-187
Prepared in cooperation with Oregon State Univ., Corvallis.

Descriptors: *Food processing, *Economic analysis, Fishes, Prices, Feasibility, Supply(Economics), Investments, Marketing, Revenue, Decision making, Production, Demand(Economics), Alaska.
Identifiers: Sea Grant program, Theragra chalcogramma.

An economic feasibility analysis of processing Alaska pollock, (Theragra chalcogramma) was conducted, and the results reported as the wholesale pollock block prices at which the present value of the investment in pollock processing facilities equals zero. These break-even block prices were compared with current market prices of pollock blocks, and it was found that pollock processing is economically feasible under all sets of assumptions evaluated. Economic feasibility research in three subject areas is reviewed: Food processing, aquaculture, and seafood processing. The aspects of each study relevant to pollock processing feasibility are emphasized. Supply variability is found to be the most significant source of uncertainty, although pollock markets, new technology, and the institutional environment are also important sources of uncertainty for the processor. Various measure of investment worth are evaluated. Results include distribution of the break-even pollock block prices under various production, cost, and discount rate assumption.

PB-294 682/0GA PC **A10**/MF **A01**
Wiggins (J. H.) Co., Redondo Beach, CA.
Natural Hazards: Storm Surge, Riverine Flooding, Tsunami Loss Models,
Larry T. Lee, Jon D. Chrostowski, and Ronald T. Eguchi. 1978, 214p NSF/PRA-7509998/3
Grants NSF-ERS75-09998, NSF-AEN74-23992

Descriptors: *Disasters, *Economic impact, *Flooding, Tsunamis, Floods, Rivers, Storm surges, Risk, United States, Economic models, Damage, Cost analysis, Residential buildings, Land use, Flood plain zoning.
Identifiers: Risk assessment.

This report presents the details of the methodology and results of a study of the risk to structures in the United States from riverine flood, storm surge, and tsunami. The hazard, exposure, and vulnerability models developed during the study are described in detail for each of the three hazards. Descriptions of the damage algorithms, the loss computation procedures, and the projected average annual losses through the year 2000 are also presented. For riverine flood, the baseline was taken in two ways: no land use control or with the current projections in land use control. Riverine flood appears to diminish in severity by the year 2000 if current trends in land use control and protection measures are continued. Nevertheless, the annual losses could be further reduced by about 20 percent if a program to implement flood-proofing of flood prone structures was begun. Several mitigation policies were tested for storm surge losses. The baseline model showed storm surge structural damage increasing from 440 million dollars in 1970 to 1200 million dollars in 2000 due to developmental growth on coastal flood plains. Two configurations for tsunami affecting the coastal communities in the Pacific Basin were investigated: present conditions and growth projections with no mitigations to reduce damage and restricting new growth on the 50 or 100 year flood plain. For the baseline model, the average annual losses increased from 15 million dollars in 1970 to 28 million dollars in 2000.

5D. History, Law, and Political Science

AD-A064 873/3GA MF **A01**
National Defense Univ., Washington, DC. Research Directorate.
The French Communist Party, Nuclear Weapons, and National Defense: Issues on the 1978 Election Campaign,
Raymond E. Burrell. Jan 79, 48p Rept no. NATL-SEC-AFFAIRS-MONO-79-2
Availability: Superintendent of Documents Government Printing Office, Washington, DC 20402 HC $1.80.

Descriptors: *Political parties, *Communists, *Nuclear weapons, Government(Foreign), France, Policies, NATO, National defense, Deterrence.
Identifiers: Elections, Western Europe, Atlantic alliance.

With the possibility that Communist or Communist-dominated coalition governments could be elected in certain countries of Western Europe, it is important to consider the implications for the Atlantic Alliance and the defense of Western Europe. France is alone among the NATO Allies in possessing both an independent nuclear strike force (FNS) and a Communist party with the prospect of playing a key role in a coalition government Historically, the parties of the French Left have been opposed to the FNS and the Atlantic Alliance. Therefore, it was an intriguing volte-face when the Parti Communiste Francais (PCF) announced, prior to the 1978 French General Assembly elections, that it no longer opposed the FNS. The author probes

beneath the rhetoric to reveal inconsistencies and contradictions inherent in the PCF positions on the FNS and the co-related issues of force structure, deterrence strategy, and the French role in the Atlantic Alliance. Despite PCF claims of acting in the French tradition of independence, he argues that PCF positions on the various issues serve the interests of the USSR to such an extent that implementation of PCF policies would neutralize the French nuclear force and seriously impair the stabilizing effect of NATO.

AD-A064 971/5GA PC **A04**/MF **A01**
Army Russian Inst., APO New York 09053.
SALT, The Soviet Approach to Strategic Superiority.
Research rept.,
George H. Selden. 1978, 56p

Descriptors: *Arms control, *Military strategy, USSR, War potential, Nuclear warfare, Strategic warfare, Military forces(Foreign), Survival(General), Policies, Defense planning, Strategic weapons, Nuclear weapons, Threat evaluation, Western security(International).
Identifiers: SALT(Strategic Arms Limitation Talks), SALT talks.

In this paper, the author first presents selected passages from open Soviet literature dealing with the concepts of war as a continuation of policy, nuclear war as it affects the character of war in general, the advisability of striving for strategic superiority and the utility of a war survival strategy. He then examines the capabilities of the Soviet Union not only to fight a strategic nuclear war, but also to win such a war in view of the restrictions placed on both the US and the USSR by existing strategic arms limitation agreements. The author concludes that through the effective use of the SALT process, the Soviets have been able to achieve rough strategic equivalence with the United States, i.e., a war-fighting capability, while demonstrating the potential to deploy overwhelmingly superior strategic forces in order to exploit whatever opportunities the attainment of that war-winning capability might offer. (Author)

AD-A065 039/0GA PC **A03**/MF **A01**
Army War Coll. Strategic Studies Inst., Carlisle Barracks, PA.
Soviet Strategy in the 1970's and Beyond.
Military issues research memo.,
Robert H. Donaldson. 20 Jul 78, 27p

Descriptors: *Foreign policy, USSR, Strategic analyses, Balance of power, Detente, Arms control, United States, China, Communism.
Identifiers: Eurocommunism.

Emerging global multipolarity, strategic parity, and a stagnant economy impelled the Soviet Union toward a policy of detente at the beginning of the decade. However, countervailing pressures from the 'military-industrial complex' have produced ambiguities and contradictions. Soviet detente policy continues the struggle with 'imperialism' and emphasizes vigilance against 'ideological subversion.' It emphasizes the need for military strength and is ambivalent regarding arms control. Moscow perceives detente as contributing to the successes of Communist parties and national-liberation movements. Soviet and American conceptions of detente differ. The USSR hopes to avoid nuclear confrontation, to acquire US trade and technology, and to prevent Sino-US collusion. It does not share the US views on 'linkage' and self-restraint in the third world. Soviet policy options have been limited by the Sino-Soviet conflict, the challenge of 'Eurocommunism,' and setbacks in the third world. There is no reason to anticipate that Soviet leadership change will bring dramatic foreign policy change. A 'sober' detente with the West will be pursued, though ideology; clashing national interests, and domestic control requirements place limits on how far the Soviet-US rivalry can be limited or their cooperation extended. (Author)

AD-A065 057/2GA PC **A06**/MF **A01**
Army War Coll. Strategic Studies Inst., Carlisle Barracks, PA.
The Soviet-Indian Alignment: Quest for Influence.
Special rept.,
Robert H. Donaldson. 25 Jan 79, 101p

Descriptors: *International relations, Foreign aid, USSR, India, Military assistance, Decision making, Government(Foreign), International trade, China, Pakistan, Indian Ocean.
Identifiers: Spheres of influence.

The Soviet Union has invested in India a large volume of material resources and diplomatic energy; the available evidence on the Soviet-Indian relationship in recent years, however, leads to the conclusion that the return of this Soviet investment, in terms of observable political influence, has been small. Since 1967, there appear to have been only three cases in which Moscow was able to cause New Delhi to do something which it would not have done otherwise. In the overwhelming majority of cases, the Soviet Union has been rebuffed in its efforts to influence Indian behavior. In some cases there is an evident and mutual disposition to discuss differences in private to limit the impact of disagreements on a relationship both sides value highly. Indian decision makers perceive a well-defined need for Soviet support in both military and economic spheres, but India's growing self-reliance places definite limits on her perceived need of the Soviet Union. For its part, Moscow perceives that the special relationship with India has brought diplomatic and commercial benefits which the Soviets are reluctant to jeopardize. The evolution of Indo-Soviet relations has resulted in a symbiosis, but one in which the balance of dependency has changed dramatically. Developments since 1971 suggest that Soviet importance to India and its ability to influence Indian decisions peaked during the Indo-Pakistan crisis and have subsequently declined, whereas the Indian ability to exert influence in Moscow may be growing.

AD-A065 258/6GA PC **A02**/MF **A01**
Army War Coll. Strategic Studies Inst., Carlisle Barracks, PA.
Adapting Academic Methods and Models to Governmental Needs: The CIA Experience.
Military issues research memo.,
Richards J. Heuer, Jr. 31 Jul 78, 20p

Descriptors: *Political science, Government(Foreign), Leadership, Statistical analysis, Intelligence, Tactical analyses, Computer applications.
Identifiers: Central Intelligence Agency, Political analysis, Political intelligence.

This paper contains highly condensed, summary description of methodological projects in political analyses undertaken by the CIA and discusses lessons learned in trying to apply social science methods to political intelligence analyses. (Author)

AD-A065 483/0GA PC **A08**/MF **A01**
Air Force Inst. of Tech., Wright-Patterson AFB, OH.
Products Liability and Tort Risk Distribution in Government Contract Programs.
Master's thesis,
Roger Dean Graham. 30 Sep 78, 165p Rept no. AFIT-CI-79-62T

Descriptors: *Contracts, Legislation, State law, Federal law, Accidents, Risk, Allocations, Litigation, Decision making, United States Government, Contract administration, Construction, Procurement, Defects(Materials), Faults, Wounds and injuries, Damage, Guarantees, Theses.
Identifiers: *Torts, *Products liability, Design defects, Property damage, Liability(Law), Contractors.

Products liability law is relevant to government contract law because contractors with the federal government are subject to state products liability laws. Under state law, contractors may be subject to third party personal injury or property damage claims on negligence, warranty or strict products liability theories of recovery. The federal government, in contrast, can only be subjected to third party personal injury or property damage liability on a negligence theory under the Federal Tort Claims Act. This distinction is the source of considerable concern between federal agencies and government contractors. The primary purpose of this thesis is to assess whether or not ordinary citizens (third parties) are adequately protected by existing laws. A secondary purpose is to assess whether or not contractors are adequately protected under present laws.

NTIS/PS-79/0431/1GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Citizen Participation in Local Government. Volume 2. 1974-May, 1979 (A Bibliography with Abstracts).
Rept. for 1974-May 79,
Edith Kenton. May 79, 374p*
Supersedes NTIS/PS-78/0422, NTIS/PS-77/0378, NTIS/PS-76/0257, and NTIS/PS-75/216. See also Volume 1, 1964-1973, NTIS/PS-77/0377.

Descriptors: *Bibliographies, *Local government, *Citizen participation, Abstracts, Participative management, Interest groups, Project planning, Sociometrics, Attitudes, Policies, Community relations, Leadership, Housing planning, Public health, Education, Schools, Industrial relations, Economic factors, Mass media, Methodology, Recreational facilities, Water resources, Coastal zone, Management, Community development, Public opinion, Quality of life, Environmental impact, Transportation, Law enforcement, Social welfare.
Identifiers: Health care, Social indicators, Crime prevention.

This bibliography contains citations discussing administration of health care, water resources, human services, coastal zones, community affairs, recreational facilities, criminal justice and crime prevention programs, economic advancement, roads and traffic control, communications, regional transportation, and public policies. (This updated bibliography contains 367 abstracts, 104 of which are new entries to the previous edition.)

NTISUB/E/234 Subscription
Library of Congress, Washington, DC. American Law Div.
Federal-State Election Law Updates: An Analysis of State and Federal Legislation, 1979.
Quarterly repts.
1979, 4 issues*
Supersedes NTISUB/D/234. Sponsored in part by National Clearinghouse on Election Administration, Washington, DC.
Paper copy available on subscription, North American Continent price $30.00/year; all others write for quote. Also available in single copies.

Descriptors: *Elections, *Legislation, Law(Jurisprudence), National government, State government, Public law, States(United States).

Federal and State elections legislation, litigation and related state opinions are synopsized in this quarterly survey. This includes elections information compiled during the January 1, 1979-March 31, 1979 time period. Report is divided into state by state legislation, state attorney's general opinions, and Federal legislation sections. A comprehensive subject index is also included.

NTISUB/E/235 Subscription
Library of Congress, Washington, DC. American Law Div.
Election Case Law: An Analysis of Recent Supreme Court, Federal Court and State Court Decisions, 1979.
Quarterly repts.
1979, 4 issues*
Supersedes NTISUB/D/235. Sponsored in part by National Clearinghouse on Election Administration, Washington, DC.
Paper copy available on subscription, North American Continent price $30.00/year; all others write for quote. Also available in single copies.

Descriptors: *Elections, *Law(Jurisprudence), National government, State government, Courts of law, Opinions, Decisions, Public law, Litigation.

Federal and State litigation are synopsized in this quarterly survey. This quarterly edition, which is a companion to the quarterly Election Law Survey, includes Federal and State case decisions during the January 1, 1979-March 31, 1979 time period. This report is divided into Election subjects and includes a comprehensive index.

PB-293 482/6GA PC **A02**/MF **A01**
Illinois Univ. at Urbana-Champaign. Cooperative Extension Service.
The Illinois Constitution, One of a Series of Publications on Government in Illinois,
C. Allen Bock, and Barbara W. Solomon. May 78, 18p CIRC-1157

Descriptors: *Public law, *Illinois, *Political systems, State government, Legislation, Administrative law, Elections, Government policies, Political science, Taxes, Local government, Education, Courts of law, Pensions, Transportation, Environmental impacts.
Identifiers: *Constitutions, *Constitutional law, Civil liberties, Civil rights, Voting.

The report covers the following aspects of the Illinois Constitution: Division of power; 1970 Constitutional Convention; Bill of rights; Voting; Taxes and tax policy; Legislative process; Amendments and revisions; and Local government.

PB-293 609/4GA PC **A06**/MF **A01**
SRI International, Menlo Park, CA.
Picket Fence Planning in California. Part II. State Functional Planning Requirements and Local Government Planning.
Final rept.,
James R. King, and Phyllis A. Guss. Aug 77, 116p CA/ASSEMBLY-622
Sponsored in part by Department of Housing and Urban Development, Washington, DC. See also SHR-0001534.

Descriptors: *Planning, *Government policies, *California, State government, Local government, Requirements.

The research resulted in four significant findings and five recommendations concerning state functional planning requirements and local government planning. Findings: (1) there is virtually no relationship between mandated functional plans and local general plans and their nine elements; (2) functional plans are directly linked to the receipt of federal and/or state financial assistance, while local plans carry no similar incentive; (3) the majority of functional plans are prepared by areawide agencies of special districts, while local general plans are prepared exclusively by cities and counties, and neither incorporate nor govern area agencies or special district functional planning activities; (4) functional planning activities cover many areas which overlap with local general plans, but little attention has been directed towards assuring consistency between the two. Recommendations: (1) Legislation should affirm the commitment to consistency among State planning requirements; (2) Legislature should reexamine the role of substate districts (COG's) to determine effective mechanisms for supporting integration of planning at the local level; (3) Legislature should revise local general planning law which would reinforce its integrative role; (4) Legislature should require a process for resolving conflicts between the intergovernmental functional planning, and the role of general purpose government in that process; (5) Legislature should clarify levels of responsibility for functional planning throughout the state.

PB-293 877/7GA PC **A04**/MF **A01**
Miami Univ., Fla. Sea Grant Institutional Program.
The Fishery Conservation and Management Act of 1976: The Regulatory Framework for Gulf of Mexico Fishery Management,
Craig R. O'Connor. Sep 78, 70p Sea Grant-SR-15, NOAA-79022201
Grant NOAA-04-7-158-44115

Descriptors: *Fisheries, *Legislation, *Mexico Gulf, Management, Treaties, International relations, Conservation, Law(Jurisprudence), Government policies, National government, State government.
Identifiers: Sea Grant program, *Fishery Conservation and Management Act of 1976.

An overview of the regulatory framework for the Gulf of Mexico Fishery Management Council for implementation of fishery management plans is provided. The framework is extensive and involved. A complementary interface among the various existing regulatory measures, international, federal, state and local, is necessary for the effective management and conservation of fishery resources. The Fishery Conservation and Management Act of 1976 provides for such a coordination by its tenor and word.

5E. Human Factors Engineering

AD-A064 960/8GA PC **A02**/MF **A01**
Defence and Civil Inst. of Environmental Medicine, Downsview (Ontario).
A Human Engineering Specification for Legibility of Alphanumeric Symbology on Video Monitor Displays.
Technical rept.,
E. L. Gorrell. Jan 79, 24p Rept no. DCIEM-TR-79X01

Descriptors: *Human factors engineering, *Alphanumeric displays, *Display systems, Requirements, Symbols, Computers.
Identifiers: *Legibility, Specifications, Canada.

Conventional human engineering specifications for display of alphanumeric symbology on video monitors consist of predictors of user performance derived from studies of display legibility. These predictors include CRT and matrix display symbol generation variables, CRT raster structure and phosphor variables, together with other variables such as symbol format and display surface antiglare treatment. This report discusses a number of significant problems associated with the development and application of conventional human engineering display specifications and presents a detailed specification for comparative and objective evalaution of video monitor legibility performance based upon legibility tests developed for the USAF. This specification consists of criteria for subject selection, visual environment design, display monitor setup, test material design and presentation, legibility task scores, and legibility test performance. (Author)

N79-19854/5GA PC **A02**/MF **A01**
Royal Aircraft Establishment, Farnborough (England).
Lighting Theory in Practical Situations.
H. J. Leebeek. Oct 78, 23p RAE-LIB-TRANS-1989, BR66837
Tran-Transl. into English of "Verlichtingstheorie in de Praktijk", Rept. 1978-17 Inst. Voor Zintuigfysiologie, Netherlands, 1978.

Descriptors: *Luminance, *Optical reflection, *Visual perception, Color vision, Equipment, Fluorescence, Lighting equipment, Luminous intensity, Sunlight.
Identifiers: Translations, Netherlands.

For abstract, see STAR 1710

PB-293 283/8GA PC **A12**/MF **A01**
Texas Tech Univ., Lubbock. Inst. for Biotechnology.
An Ergonomic Analysis of Selected Sections in Subpart D, Walking and Working Surfaces,
M. M. Ayoub, and Gary M. Bakken. Aug 78, 260p OSHA/RP-79/001
Contract DL-B-9-F-8-1320

Descriptors: *Human factors engineering, *Safety engineering, *Ladders, *Scaffolds, *Stairways, Design criteria, Standards, Safety, Requirements, Accident prevention, Platforms, Industrial hygiene.
Identifiers: Safety standards, Human factors, Occupational safety and health, Guardrails.

The report contains the ergonomic analysis of the 7 following topical areas of the January 7, 1978 redrafted standard-subpart D, Walking and Working Surfaces: (1) Rest platform and construction for fixed ladder climbing; (2) Scaffold load specifications; (3) Work surface; guardrail spacing; (4) Fixed ladder cage-type structure design and construction; (5) Attributes of a qualified climber; (6) Fixed stairways; and (7) Portable ladders. The report presents an evaluation of the draft covered biochemical considerations, physiological responses, and anthropometric factors through investigation of the areas mentioned above.

5F. Humanities

PB-293 386/9GA PC **A03**/MF **A01**
California State Univ., Chico. Dept. of Anthropology.
Archaeological Survey of the Cedarville, Alturas, and Lookout Indian Rancherias, Modoc County, California.
Final rept.,
Keith L. Johnson. May 77, 32p NPS/WAC-79/05
Contract NPS-PX-8100-7- 0002
Sponsored in part by Bureau of Indian Affairs, Washington, DC.

Descriptors: *Archaeology, Anthropology, Ethnology, Site surveys, American Indians, California.
Identifiers: Modoc County(California), Indian reservations.

Five archeological sites were discovered and recorded during an archeological survey of the Cedarville, Alturas, and Lookout Indian Rancherias in Modoc County, California. A number of other isolated cultural values also were noted on each reservation. None of the cultural resources appears to qualify for inclusion on the National Register of Historic Places. A comprehensive archeological and ethnographic research plan to preserve the cultural heritage of each rancheria is outlined.

5G. Linguistics

NTIS/PS-79/0403/0GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Machine Translation (A Bibliography with Abstracts).
Rept. for 1964-May 79,
Mary E. Young. May 79, 192p*
Supersedes NTIS/PS-78/0448, NTIS/PS-77/0484, NTIS/PS-76/0434, NTIS/PS-75/411, and COM-73-11717.

Descriptors: *Bibliographies, *Machine translation, Computational linguistics, Syntax, Semantics, Computer programming, Translating.
Identifiers: Foreign languages, Vocabulary.

Studies on machine translation of various languages are cited. Topics concerning syntax, computer programming, computer hardware, and semantics are included. (This updated bibliography contains 184 abstracts, 4 of which are new entries to the previous edition.)

PB-293 232/5GA PC **A03**/MF **A01**
Research Inst. of National Defence, Stockhom (Sweden).
Algorithms Needed in a Natural Language Understanding System,
Jacob Palme. Feb 79, 31p FOA-C10077-M3(E5)
See also PB-293 233.

Descriptors: *Semantics, Syntax, Artificial intelligence, Grammars, English language, Sweden.
Identifiers: *Natural language, Natural language processing, Question answering systems, Swedish Question Answering Project, SQAP system.

The author claims that a computerized natural language understanding system will have to contain a large number of rules about how certain words or word combinations are to be interpreted. A crucial problem in the design of a natural language understanding system will then be the language in which to input these rules. To aid the designer of future natural language understanding systems, the author lists a selection of such rules which are part of an existing question answering system. The designer of a new system could test his rule language by checking that rules corresponding to those listed in this report are simple to put in his rule language.

PB-293 233/3GA PC **A03**/MF **A01**
Research Inst. of National Defence, Stockholm (Sweden).
Postlude to a Question-Answering Project,
Jacob Palme. Feb 79, 38p FOA-C10078-M3(E5)
See also PB-293 232.

Descriptors: Artificial intelligence, Syntax, Semantics, English language, Performance evaluation, Sweden.
Identifiers: *Natural language, *Question answering systems, PL360 programming language, IBM-360 computers, Swedish Question Answering Project, SQAP system.

From 1967 to 1973, the author worked in a project group developing a computerized natural language question answering system. This report, written after the conclusion of the project, tries to summarize some experiences about writing such a system which might be of help to someone starting a new project developing a natural language understanding system. Some additions are included in a previous report on the input translation methods in the system.

5I. Personnel Selection, Training, and Evaluation

AD-A064 899/8GA PC **A05**/MF **A01**
Naval Postgraduate School, Monterey, CA.
An Application of Organizational and Managerial Principles as an Improvement to the Current Army Training and Evaluation Program for the Mechanized Infantry.
Master's thesis,
Dewey Peter George, and Richard Leo Gerding. Dec 78, 91p

Descriptors: *Army training, *Management, *Military exercises, Military force levels, Combat readiness, Resource management, Division level organizations, Battalion level organizations, Brigade level organizations, Company level organizations, Theses.
Identifiers: ARTEP(Army Training and Evaluation Program), *Training management, Assessment, Effectiveness.

The United States Army in the past five years has begun a revolutionary change in its concept of training. The Army Training and Evaluation Program (ARTEP) is the realization of this change. The implementation of the ARTEP has not achieved optimal results. Training management decisions at division, brigade, and battalion levels must be identified and their ramifications understood; research has shown certain approaches more beneficial than others. The training/evaluation/control of external exercises using ARTEP has been identified as a universally deficient area. This study, through application of organizational and managerial principles, provides practical guidance to training decision makers from division down to company level. It also provides an improved system for the training/evaluation/control of the external exercise. (Author)

AD-A064 902/0GA PC **A05**/MF **A01**
Naval Postgraduate School, Monterey, CA.
Advertising Budgets, Advertising Effectiveness, and the Navy's Recruiting Advertising Program.
Final rept. 1 Oct 76-30 Sep 78,
James K. Arima. Dec 78, 90p Rept no. NPS-54-78-009

Descriptors: *Recruiting, *Enlisted personnel, Public relations, Naval budgets, Allocations, Resource management, Naval personnel, Motivation, Mass media, Statistical analysis, Volunteers, Rates, Linear regression analyses, Mathematical prediction, Literature surveys.
Identifiers: *Publicity, Effectiveness.

A selective review of the literature on advertising effectiveness revealed no generalizable results for setting advertising budget decisions. The primary problem is a lack of knowledge as to how advertising, as input, affects an output, such as sales. All Navy advertising expenditures for 1976 and 1977 were allocated to counties by month for 1976 and 1977 and supplemented with recruiting and environmental data to examine the relationship between advertising and enlistments. Total advertising expenditures were moderately related to total enlistments (R sq = .442), but this relationship was found to be the result of management planning and allocation of resources and goals. When advertising and enlistments were made rate variables, there was no linear relationship because the rate of advertising increased rapidly without a corresponding increase in enlistment rates. A fourth root transformation of advertising rates permitted application of a linear regression model where advertising was found to be the most significant predictor of enlistment rates. Recommendations are made for further studies and actions to evaluate and increase advertising effectiveness. (Author)

AD-A064 987/1GA PC **A04**/MF **A01**
Naval Postgraduate School, Monterey, CA.
An Analysis of the Effect of Lowered Basic Test Battery Selection Scores on Rephasals and Disenrollments at Selected Coast Guard Class A Schools.
Master's thesis,
Daniel E. Kalletta. Dec 78, 52p

Descriptors: *Attrition, *Coast Guard, *Training, Ratings, Selection, Students, Schools, Performance(Human), Theses.

This thesis investigates and evaluates the effect of lowered Basic Test Battery (BTB) selection scores on rephasals and disenrollments at selected Coast Guard Class A schools. It analyzes the differences in rephasal rate and disenrollment rate for Storekeeper, Subsistence Specialist, and Radioman Schools for the year prior to (FY 1976) and the year after (FY 1977) the lowering of the BTB selection scores (which occurred in July, 1976). It compares the performance of students entering these schools with the lower BTB scores with those students entering with the higher BTB scores during FY 1977. In addition, it analyzes the relationship between the successful completion of these schools and the BTB selection scores. The results indicate that students with BTB scores lower than the earlier (higher) cutoff tend to have higher rephasal and disenrollment rates than students with the higher BTB scores. If the input percentage of the lower-scoring students should increase, there is likely to be a significant increase in both the rephasal and disenrollment rates for all three schools. (Author)

AD-A064 996/2GA PC **A07**/MF **A01**
Naval Postgraduate School, Monterey, CA.
A Cost-Benefit Analysis of the Proposed Consolidation of All Navy and Marine A6-E Fleet Replacement Training Squadrons.
Master's thesis,
Kevin Philip Kelley. Dec 78, 147p

Descriptors: *Flight training, *Naval training, *Marine Corps training, *Cost effectiveness, Naval air stations, Attack aircraft, Feasibility studies, Cost estimates, Resource management, Naval planning, Flight crews, Proficiency, Manpower utilization, Squadrons, Theses.
Identifiers: A-6 aircraft, A-6E aircraft.

This thesis contains a Cost-Benefit Analysis conducted to determine the advisability and the economic feasibility of consolidating all Navy and Marine Corps A-6E Fleet Replacement Training Squadrons. A detailed examination is made of the prevailing and projected conditions at each of the current training sites. The accumulated data is analyzed regarding its effect on the training environment overall and the requirements for aircraft and personnel support under both present circumstances and the proposed conditions of consolidation. A range of feasible alternatives is then developed and cost estimates are presented for those possibilities. It is shown that consolidation is a realistic option, with certain logistical constraints, which will produce specific benefits in the quality of the resultant aircrews and possible fiscal savings to the Department of the Navy as well. The final recommendation involves adoption of the proposal according to the guidelines of one of two realistic alternatives developed by the research. (Author)

AD-A065 001/0GA PC **A02**/MF **A01**
Naval Aerospace Medical Research Lab., Pensacola, FL.
An Evaluation of the Omnibus Personality Inventory in the Prediction of Attrition in Naval Aviation Training.
Interim rept.,
Glenn R. Griffin, and Julie A. Hopson. Nov 78, 21p Rept no. NAMRL-1253

Descriptors: *Attrition, *Naval aviation, *Naval training, Flight training, Motivation, Perception(Psychology), Predictions, Students, Selection.

The numerous Navy research efforts to identify motivational predictors of student naval aviator and/or student naval flight officer attrition have met with little success. In spite of the failures associated with the application of personality or motivational measures to naval aviation populations, there is little doubt that much of the attrition in naval aviation training is of a motivational origin. As a result, research personnel continue to seek motivational measures that may identify those individuals most likely to succeed in training. The present report describes an evaluation of the Omnibus Personality Inventory (OPI) as a predictor of student motivational attrition in naval aviator flying training. Initial validation results suggested that certain OPI scales were predictive of student naval aviator and student naval flight officer success in naval flying training programs. A cross-validation analysis was conducted to determine the stability of these findings. The analysis indicated that significant cross-validity relationships existed for current selection tests but not for OPI predictor measures. It must be concluded that the OPI is not sufficiently related to student aviator training performance to be of value in the prediction of aviator motivational attrition. These results support previous conclusions that future aviation selection research should be directed toward the identification of performance oriented, non-paper-and-pencil measures as motivational predictors. (Author)

AD-A065 025/9GA PC **A02**/MF **A01**
laval Aerospace Medical Research Lab., Pensacola, FL.
A Comparison of Black Student Performance and White Student Performance in Naval Aviation Training.
Special rept. 1973-1976,
Annette G. Baisden, and Richard E. Doll. 30 Nov 78, 15p Rept no. NAMRL-SR-78-7

Descriptors: *Performance(Human), *Naval training, *Naval aviation, Ratings, Comparison, Selection, Students, Negroes, Caucasians, Attrition.
Identifiers: Minority students, Pilot training.

This report represents the first in a series of reports analyzing minority officer accessions as related to the Naval Aviation Training Program. It involves a comparison of black students with white students in pilot training during calendar years 1973-1976, using such performance measures as Aviation Selection Tests, Peer Rating, Officer-Like-Quality grade, Environmental Indoctrination Final grade, Basic and Advanced Flight grades, Basic and Advanced Academic grades, and pass/attrite. (Author)

AD-A065 038/2GA PC **A03**/MF **A01**
Army War Coll. Strategic Studies Inst., Carlisle Barracks, PA.
Red Army as the Instrument of National Integration.
Military issues research memo.,
Teresa Rakowska-Harmstone, and Raymond Sturgeon. 31 Jul 78, 37p

Descriptors: *Army personnel, *Ethnic groups, Human relations, Integration, Army, Military forces(Foreign), Combat effectiveness, USSR, Attitudes(Psychology), Nations.

This memorandum considers the role played by the Red Army as an instrument of functional integration of all Soviet non-Russian nations and nationalities. The author asserts that the Army appears to be effective in attitudinal integration of autonomous and smaller nationalities, but has had little effect in counteracting ethnic nationalism of major union republic nations. She concludes that although this failure in attitudinal integration does not seem to be at present an important variable in the combat effectiveness of Soviet armed forces, it is perceived as a weakness in the Army and in the society at large. (Author)

AD-A065 053/1GA PC **A02**/MF **A01**
Air Force Human Resources Lab., Brooks AFB, TX.

Ipsative Rankings as an Indicator of Job-Worker Match.
Final rept. Jun 77-Sep 78,
Cecil J. Mullins, Joseph L. Weeks, and James M. Wilbourn. Dec 78, 17p Rept no. AFHRL-TR-78-70

Descriptors: Ranking, Ratings, *Personnel management, Supervisors, Allocations, Statistical analysis, Jobs, Performance(Human), Scoring, Standards, Validation.
Identifiers: Ipsative measures, *Job analysis, *Placement.

Ipsative measures of rated characteristics avoid the problems of halo and leniency error, but they have not been useful in discriminating between subjects (normative uses). This study investigated the efficacy of converting ipsative measures of subjects and of jobs to a job-worker match coefficient of correlation, which then might be used normatively. The results did not firmly establish the superiority of either ipsative or normative rankings. (Author)

AD-A065 095/2GA PC **A07**/MF **A01**
Training Analysis and Evaluation Group (Navy), Orlando, FL.
The Design of a Shiphandling Training System.
Final rept. Jun 77-Jan 79,
Curtis C. Cordell, Roger V. Nutter, and Edward A. Heidt. Jan 79, 142p Rept no. TAEG-65
See also Rept. no. TAEG-41, AD-A038 402.

Descriptors: *Naval training, Shipboard, Handling, Naval planning, Costs, Education, Training devices.
Identifiers: *Shiphandling.

This is the second of two reports addressing the training of shipbuilders. The first, Shiphandling and Shiphandling Training, TAEG Report No. 41, December 1976, established the knowledge and skill elements required of competent shiphandlers. Based on these elements, a concept was proposed for a career-based training system for prospective shiphandlers. The system design included three courses of ashore training interspersed with operational tours at sea. Since Naval officers are expected to serve aboard vessels of widely divergent characteristics and to proceed from extended periods ashore to responsible positions aboard Naval vessels, two additional types of training were proposed for the system--refresher and transition training. In support of the training system, two needed training devices were identified--a full-mission bridge simulator and a small craft designed for use as a trainer. In the current study, the initial concept is fully developed for a career-based training system for integration into the existing training curricula. A shiphandling unit is proposed for the three Surface Warfare Officers School (SWOS) courses. Only minor restructuring of the three curricula is needed. Course time remains essentially unchanged. It is proposed that underway time in a conning capacity on the small craft trainer be scheduled, without exception, in the Department Head Course and some additional conning time be made available to attendees of the PCO/PXO Course who have had little recent at-sea experience. Content material for the transition and refresher training courses can be drawn from the appropriate SWOS courses.

AD-A065 122/4GA PC **A03**/MF **A01**
Validated Instruction Associates, Inc., Albion, MI.
Working Women and the Cycle of Defeat: Sex-Specific Responses and Their Emotional and Behavioral Consequences.
Technical rept. 1 Nov 78-31 Jan 79,
Kirsten Hinsdale, and J. David Johnson. Jan 79, 44p Rept no. TR-6
Contract N00014-77-C-0625

Descriptors: *Attitudes(Psychology), *Job analysis, *Sex, Behavior, Females, Males, Naval personnel, Enlisted personnel, Models, Vocational guidance.

The purpose of this study was to determine the general validity of the final stages of a theoretical model describing the psychosocial dynamics of sex discrimination in work groups. Subjects included 112 male and 104 female Navy enlisted personnel, who were given 16 hypothetical situations describing both punishing and rewarding responses to masculine and feminine behaviors. For each situation, subjects were asked a series of questions concerning their behavioral and emotional responses and the predicted probability that the situation might arise again in the future. The data provided some support for the general human dynamics in the model. It also showed that women and men differed in their behavioral responses to the punitive situations, and in their emotional responses to the punitive situations involving masculine behaviors. Although general analyses revealed no sex differences in the predicted probabilities for the same situations recurring, more specific analyses suggested that males were more likely, in response to punitive situations, to report a maintenance or increase in the use of both feminine and masculine behaviors. Results are interpreted in terms of the model and previous research findings concerning the model. (Author)

AD-A065 290/9GA PC **A17**/MF **A01**
RAND Corp., Santa Monica, CA.
Defense Manpower Policy. Presentations from the 1976 Rand Conference on Defense Manpower.
Interim rept.,
Richard V. L. Cooper. Dec 78, 383p Rept no. RAND/R-2396-ARPA
Contract MDA903-78-C-0084, ARPA Order-3478

Descriptors: *Personnel management, Manpower utilization, *Military personnel, Defense planning, Policies, Recruiting, Salaries, Personnel retention, Performance(Human), Enlisted personnel, Military budgets.

Selected presentations are given from the 1976 Rand Conference on Defense Manpower, a DoD-wide effort to bring together researchers and policymakers to discuss important defense manpower policy problems. The nineteen papers reproduced in this volume cover four broad policy areas: (1) the demand for manpower, including both numbers and types of personnel needed and how these requirements are affected by various factors; (2) military manpower procurement in a volunteer environment; (3) other aspects of the military manpower management problem, including training, promotion, and compensation; and (4) economic and social effects associated with defense manpower. One of the primary purposes of the Conference was to exchange information and ideas and to begin to establish research priorities. These papers, which highlight problem areas and suggest potential solutions, offer a useful first step in structuring the overall defense manpower policy problem.

AD-A065 386/5GA PC **A05**/MF **A01**
Navy Personnel Research and Development Center, San Diego, CA.
Personal and Organizational Determinants of Enlisted Attrition.
Final rept. 1 Nov 77-1 Feb 78,
Alan W. Lau. Mar 79, 86p Rept no. NPRDC-TR-79-11

Descriptors: *Attrition, All volunteer, Naval personnel, Enlisted personnel, Recruits, Military organizations, Questionnaires, Males.

This study was conducted to determine the relative influence of various individual and organizational factors on first-term enlisted attrition. A longitudinal design was employed whereby a cohort of first-term recruits (both 'A' school and apprentice school personnel) was tracked over a 12-month period. Results indicated that: (1) first-year attrition was significantly higher for experimental group personnel(who were eligible for voluntary separation) than for control group personnel, (2) attrition rates were higher for apprentice personnel than 'A' school personnel, (3) separation decisions were related to preservice demographic characteristics, family and home problems, attitudes toward the Navy formed during recruit training, and in-service discrepancies between expectations and experiences, and (4) the work environment explained more variance in later separations and individual characteristics, more variance in early separations(i.e., within the first 6 months). (Author)

AD-A065 408/7GA PC **A09**/MF **A01**
Assistant Secretary of Defense (Manpower Reserve Affairs and Logistics), Washington, DC.
Base Structure Annex to Manpower Requirements Report for FY 1980.
Final rept.
Jan 79, 197p

Descriptors: *Manpower, *Defense planning, *Department of Defense, Military requirements, Military training, Reports, Global, Costs, Military facilities, Bases(Structures), Army, Navy, Air Force, Marine Corps, Air Force Facilities, Naval shore facilities.

This annex contains a report on the DoD base structure associated with the forces and personnel levels included in the President's Budget for FY 80. The base structure is identified by Military Service and regionally, by bases in the Fifty States, U.S. Territories and Possessions and foreign overseas areas. (Author)

ED-156 212 Not available NTIS
Experimental Simulation in Introductory Sociology: Modifying EXPER-SIM to Meet the Needs of Beginners,
George H. Conklin. Jun 77, 12p
Paper presented at the Conference on Computers in the Undergraduate Curricula, East Lansing, MI. June 20-22, 1977. For entire proceedings, see IR 006 142.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$1.67, MF$0.83 Plus Postage.

Descriptors: *Computer assisted instruction, Computer programs, Course descriptions, Fundamental concepts, Higher education, Instructional design, Instructional innovation, Simulation, Social sciences, *Sociology, Student ability, Undergraduate study.
Identifiers: EXPER SIM, Sweet Briar College VA.

Introductory social science courses could benefit from introducing experiment simulation into the curriculum via the computer. Properly used, the computer should enable the instructor to include the benefits of the laboratory at a reasonable cost into a pre-existing course. The EXPER-SIM (Experiment Simulation) program was combined with PROFIS, a program for introductory sociology, which made possible the inclusion of many techniques of analysis without detracting from a crowded curriculum. Experience has shown, however, that unless the special needs of the beginning student are taken into account, the computer can also introduce confusion into an otherwise well-organized class. An appendix provides an example of simulation program developed for the course.

ED-156 213 Not available NTIS
Effectively Teaching Undergraduate Social Research Via Computer Data Analysis,
William R. Brown. Jun 77, 9p
Paper presented at the Conference on Computers in the Undergraduate Curricula, East Lansing, MI. June 20-22, 1977. For entire proceedings, see IR 006 142.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$1.67, MF$0.83 Plus Postage.

Descriptors: *Computer assisted instruction, Course descriptions, Curriculum planning, Data analysis, Data collection, Higher education, Instructional design, Instructional innovation, Research methodology, Research skills, Social sciences, *Sociology, Undergraduate study.
Identifiers: Florida Technological University.

An approach is described for teaching undergraduate sociology students social research skills through student use of packaged computer programs while carrying out their own research projects. Two back-to-back courses focus on training in data collection methodologies, followed by training in data analysis using the computer. In order to meet the needs for accurate information in future decision making, it is strongly suggested that additional social research electives be offered on a regular basis. Given the present level of computer technology and the cautious addition of methodological innovation and training, one can expect a surge in the rate and quality of functional informa-

tion which sociologists can provide for those in positions of authority.

ED-156 214 Not available NTIS
Effect of Computer-Delivered Testing on Achievement in a Mastery Learning Course of Study with Partial Scoring and Variable Pacing,
Richard M. Evans, and Alvin J. Surkan. Jun 77, 8p
Paper presented at the Conference on Computers in the Undergraduate Curricula, East Lansing, MI. June 20-22, 1977. For entire proceedings, see IR 006 142.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$1.67, MF$0.83 Plus Postage.

Descriptors: Achievement gains, *Computer oriented programs, Educational innovation, Educational psychology, Educational research, Evaluation methods, Mastery learning, Pacing, Student opinion, *Student testing, Teacher education curriculum, Undergraduate study.
Identifiers: *Computer developed instruction, Morningside College IA.

The recent arrival of portable computer systems with high-level language interpreters now makes it practical to rapidly develop complex testing and scoring programs. These programs permit undergraduates access, at arbitrary times, to testing as an integral part of a mastery learning strategy. Effects of introducing the computer were studied by using, for control, data from students enrolled in the same undergraduate educational psychology course during the previous year. Results show that computer organized testing allowed students to take more replicates of each examination. Consequently there was, for three out of five examinations, an increase in the values of a measure of achievement based on the highest grade attained and time required before taking the final replicate desired for each examination of the course. Results of a student opinion survey indicated that in the presence of the computer organized testing, there was a greater feeling of learning than in a paper-and-pencil testing situation which allowed similar feedback with an invisible ink answer sheet. It was concluded that the feasibility of practical program development and that individual student utilization of potable, stand-alone, computer systems which now permit variable-paced mastery learning are propaedeutic in curriculum reform.

ED-156 217 Not available NTIS
Educational Products Information Exchange Inst., New York.
The Education Division's Joint Dissemination Review Panel: Three Papers. Product 2.
1 Mar 77, 34p
Contract OE-400-75-0023
For related documents, see IR 006 451-452.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$2.06, MF$0.83 Plus Postage.

Descriptors: Decision making, Educational development, Educational resources, Educational technology, Evaluation criteria, *Evaluation methods, Federal government, Government publications, Information dissemination, *Instructional materials, Selection.
Identifiers: Joint Dissemination Review Panel.

This document, which is the second product of an EPIE (Educational Products Information Exchange) project investigating the criteria used to select instructional materials, consists of three papers dealing with the Education Division of the JDRP (Joint Dissemination Review Panel). Paper I presents the purpose, procedures, and criteria established by the JDRP to be used in judging the effectiveness of educational products, materials, practices, and methods developed with funds from either OE (Office of Education) or NIE (National Institute of Education). The JDRP ensures that the two agencies apply the same criteria for judging evidence of effectiveness before federal dissemination. Paper II, by Dr. Lois-ellin Datta, explains the JDRP controversy centering around four issues: (1) criteria used, (2) review of proprietary products, (3) equity of opportunity in providing evidence, and (4) impact of evaluation practice and flow of products to the field. Paper III, by G. Kasten Tallmadge, suggests tha JDRP approval not be considered a sufficient condition for federal expenditure for dissemination, but that JDRP approval constitute an approval for further evaluation of the product being considered.

ED-156 218 Not available NTIS
Educational Products Information Exchange Inst., New York.
A Survey and Analysis of Educational Review Activities (A Preliminary Review). Product 3,
Diana Schermer. May 75, 93p
Contract DHEW-400-75-0023
For related documents, see IR 006 450-452.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$4.67, MF$0.83 Plus Postage.

Descriptors: Decision making, Decision making skills, Educational development, Educational needs, Educational resources, Educational technology, Evaluation criteria, *Evaluation methods, Guidelines, *Instructional materials, Media selection, Selection.

Despite the fact that reviews of educational products for selection purposes usually have to be based on evidence less conclusive than formal evaluations, these reviews must be approached as thoughtfully and as rationally as possible. More fruitful results will come from review procedures in which the purpose of and criteria for the review are clearly analyzed and stated. This document discusses the educational product review process in terms of: (1) types of reviews, (2) special issues about criteria, (3) problems with evidence, (4) types of selection criteria including need criteria, intrinsic quality, practicality and effectiveness, and (5) practicality of reviews. This is the third publication of an EPIE (Educational Products Information Exchange) project investigating the criteria used to select instructional materials.

ED-156 219 Not available NTIS
Educational Products Information Exchange Inst., New York.
Description of Selection Guidelines: Descriptions of Guidelines, Training Materials, and Consumer-Oriented Catalogs To Be Used in the Selection of Instructional Materials. Product 4.
1976, 65p
Contract OE-400-75-0023
For related documents, see IR 006 450-451.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$3.50, MF$0.83 Plus Postage.

Descriptors: Catalogs, Cost effectiveness, Educational alternatives, Educational development, Educational resources, Educational technology, *Evaluation criteria, Evaluation methods, Guidelines, *Instructional materials, Media selection, Professional training, *Resource guides, Selection, Social values.

This catalog contains descriptions of selected guidelines, training materials, and consumer oriented catalogs, designed to be used in the selection of instructional materials. Each listing contains the following information: (1) title, (2) date, (3) developer, (4) availability/source, (5) cost, (6) audience, and (7) contents/purpose. The descriptions are divided into three main categories: (1) general purpose guidelines and training materials, (2) guides focusing on the specific criteria of social fairness and cost effectiveness, and (3) consumer catalogs for use in selecting materials by format, content area, and user group. This is the fourth publication resulting from an EPIE (Educational Products Information Exchange) project investigating the criteria used to select instructional materials. It is expected that this publication will not only be useful in the selection process, but also in defining selection criteria, developing selection procedures, and investigating product selection activities.

ED-157 499 Not available NTIS
United Nations Educational, Scientific, and Cultural Organization, Paris (France).
UNISIST: A Course in Administration for Managers of Information Services: Design, Implementation and Topical Outline,
Paul Wasserman, and John R. Rizzo. 1977, 84p
SC-76/WS/110
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, MF$0.83 Only, Plus Postage.

Descriptors: Bibliographies, Curriculum design, *Curriculum guides, Information centers, Information services, *Library administration, *Management education, Seminars, Teaching methods, Workshops.
Identifiers: UNISIST.

These guidelines were developed for use by personnel responsible for planning seminars and workshops to train administrators of information services and centers. Section I is a general introduction to the course manual including purpose and scope, course orientation, and topics to be covered. Section II suggests personal qualifications and characteristics of applicants to be used as criteria in the selection of course participants. Section III discusses methods of instruction, use of media, and the role of directors, faculty, and participants as instructional resources. Section IV outlines the qualifications of program directors and faculty. Facilities and services necessary for hosting the course are covered in Section V. Section VI provides an illustrative program for a two-week, ten session workshop. Ten topical outlines plus a bibliography for each session are included.

ED-157 500 Not available NTIS
Georgia Univ., Athens. Bureau of Educational Studies and Field Services.
Special People, Special Needs, Special Services. The Seventh Annual Conference for Continuing Professional Development,
Jane C. Terwillegar. 1978, 75p
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$3.50, MF$0.83 Plus Postage.

Descriptors: Bibliographies, Educational legislation, *Handicapped children, Handicapped students, Homebound children, Laws, *Library services, Resource guides, School libraries.
Identifiers: Specialized training, Schools.

This resource guide will assist school media specialists and professional educators in planning the modification of services, programs and facilities in order to comply with Federal law PL 94-142, which extends public education to all handicapped children. Section I, which is comprised of selections from a handbook of special education policies and procedures, includes a checklist of characteristics of exceptional children, outlines of referral and evaluation procedures and due process, and the legal criteria of exceptional children according to Georgia law. Section II lists national and state agencies that provide services for handicapped children. Section III discusses the role of the school media center in the education of exceptional children, including services to students and professional staff, modification of equipment, and bibliography of materials needed to support the special education program. Sections IV and V contain bibliographies of instructional media and programs for exceptional children, as well as materials to encourage understanding of these children by both professional staff and fellow students.

ED-157 503 Not available NTIS
Huntington Beach Union High School District, CA.
Competency Based Curriculum: Health Education.
1978, 27p
For related documents, see IR 006 007-010.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, MF$0.83 Only, Plus Postage.

Descriptors: Behavioral objectives, *Curriculum design, *Health education, Performance based education, Secondary education.

This document, produced by a committee of teachers in health education, includes a program description with pertinent extracts from the school district philosophy, as well as major goals and objectives. Curricular objectives state what a student

should know, demonstrate, or be able to do in that study area. The sequence of goals and objectives represents two levels of standards: graduation standards for all students, and desirable standards for those students wishing to further their education in technical or vocational studies.

ED-157 504 Not available NTIS
Huntington Beach Union High School District, CA.
Competency Based Curriculum: Industrial Education.
1978, 19p
For related documents, see IR 006 006, 008-010.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, MF$0.83 Only, Plus Postage.

Descriptors: Behavioral objectives, *Curriculum design, *Industrial education, Performance based education, Secondary education.

This document, produced by a committee of teachers in industrial education, includes a program description with pertinent extracts from the school district philosophy, as well as major goals and objectives. Curricular objectives state what a student should know, demonstrate, or be able to do in that study area. The sequence of goals and objectives represents three levels of standards: graduation standards for all students, desirable standards for those students wishing to further their education in technical or vocational studies, and advanced standards for those students planning to attend a four-year college or university.

ED-157 505 Not available NTIS
Huntington Beach Union High School District, CA.
Competency Based Curriculum: Language Arts.
1978, 48p
For related documents, see IR 006 006-007, 009-010.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, MF$0.83 Only, Plus Postage.

Descriptors: Behavioral objectives, *Curriculum design, *Language arts, Performance based education, Secondary education.

This document, produced by a commitee of teachers in language arts, includes a program description with pertinent extracts from the school district philosophy, as well as major goals and objectives. Curricular objectives state what a student should know, demonstrate, or be able to do in the areas of writing, literatue, speaking, and listening. The sequence of goals and objectives represents three levels of standards: graduation standards for all students, desirable standards for those students wishing to further their education in technical or vocational studies, and advanced standards for those students planning to attend a four-year college or university.

ED-157 506 Not available NTIS
Huntington Beach Union High School District, CA.
Competency Based Curriculum: Mathematics.
1978, 40p
For related documents, see IR 006 006-008, 010.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, MF$0.83 Only, Plus Postage.

Descriptors: Behavioral objectives, *Curriculum design, Performance based education, Secondary education, *Secondary school mathematics.

This document, produced by a committee of teachers in mathematics, includes a program description with pertinent extracts from the school district philosophy, as well as major goals and objectives. Curricular objectives state what a student should know, demonstrate, or be able to do in this study area. The sequence of goals and objectives represents three lvels of standards: graduation standards for all students, desirable standards for those students wishing to further their education in technical or vocational studies, and advanced standards for those students planning to attend a four-year college or university.

ED-157 507 Not available NTIS
Huntington Beach Union High School District, CA.
Competency Based Curriculum: Reading.
1978, 30p
For related documents, see IR 006-009.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, MF$0.83 Only, Plus Postage.

Descriptors: Behavioral objectives, *Curriculum design, Performance based education, Reading diagnosis, *Reading instruction, Reading materials, Secondary education.

This document, produced by a committee of teachers in reading instruction, includes a program description with pertinent extracts from the school district philosophy, as well as major goals and objectives. Curricular objectives state what a student should know, demonstrate, or be able to do in these areas: word attack, vocabulary, comprehension, reading study skills, reading rate, and affective learning. The final sections suggest means of assessment, learning activities, and reading materials.

ED-157 508 Not available NTIS
Nova Univ., Fort Lauderdale, FL.
A Comparison of Interactive and Non-Interactive Audio-Visual Programs. Applied Educational Research and Evaluation Modul ,
Ralph Parsons. Feb 78, 18p
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$1.67, MF$0.83 Plus Postage.

Descriptors: Audiovisual aids, Audiovisual instruction, *Autoinstructional aids, Comparative analysis, Media research, Post secondary education, Vocational education.

This study was undertaken to determine if the instructional quality of audiovisual materials is improved when student self-tests are included in the program. Two sound/slide programs on reading line graphs were tested on one-year vocational students at Forsyth Technical Institute, North Carolina. Twenty students in the experimental group used interactive material with self-tests mixed into the program. The control group of 26 students used an identical program without interactive material. All students took the same post-test based on the objectives of the program; these were lower-level cognitive objectives. The test scores were compared using a t-test (two tailed). The post-test results indicated that the experimental group achieved a higher percentage of program objectives at the 5% level of significance. The advantage was so narrow, however, and the limitations of the study so numerous, that further study was recommended.

ED-157 509 Not available NTIS
National Technical Inst. for the Deaf, Rochester, NY.
The Development of an Individualized Course in Basic Business Filing Rules and Procedures for Post Secondary Deaf Students Utilizing Computer Assisted Instruction, Gregg Programmed Instruction, and Classroom Teacher,
James R. vonFeldt. Aug 77, 22p
Best copy available.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$1.67, MF$0.83 Plus Postage.

Descriptors: *Computer assisted instruction, Computer oriented programs, *Deaf education, Individualized instruction, *Instructional design, Office occupations education, Post secondary education, Programmed instruction.
Identifiers: Gregg quick filing practice set.

Out of a need to provide self-paced instructional units, a project was developed combining various delivery techniques in a unique package designed to increase instructor efficiency and to allow students to proceed with learning as quickly as they are individually able. Although the projct is not yet in final form, field testing has been encouraging. Queueing was eliminated; students quickly divided into three distinct groupings and were able to proceed at their own pace; comparison of pre- and post-test data showed an average increase of 35% as a result of the program; overall performance of the class increased; and finally, several students completed their work three weeks ahead of schedule. Long-range plans include an in-depth research effort to discover whether there are any significant differences between this approach and the more traditional classroom/lab situation.

ED-157 510 Not available NTIS
Agency for Instructional Television, Bloomington, IN.
Communication, Fifth and Sixth Graders, and the Essential Learning Skills Television Project,
Mary Lou Ray. 1977, 24p
Prepared in cooperation with Exxon Corp., New York. For related documents, see IR 006 017, IR 006 019, and IR 006 021.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, MF$0.83 Only, Plus Postage.

Descriptors: Communication(Thought transfer), Critical thinking, Curriculum, Educational television, Grade 5, Grade 6, Intermediate grades, *Language arts, Literature reviews, Study skills, *Teaching methods.

Communication and language arts are central in any consideration of the essential learning skills. This paper focuses on communication skills for fifth and sixth graders, particularly the language skills of speaking, reading, and writing for which schools assume major responsibility. The integral relationship between language abilities and critical thinking/study skills (skills crucial for fifth and sixth graders) is explored in some detail. The paper has two major aims: to present pertinent overviews of the literature and to discuss what is usually taught, and how it is taught, in each of the major language art areas; and to make specific recommendations about how The Essential Learning Skills Television Project can contribute to a discovery approach for teaching communication skills.

ED-157 511 Not available NTIS
Agency for Instructional Television, Bloomington, IN.
Coping in the 1980's: Inquiry Skills and Participation in Decision-Making for Fifth and Sixth Graders,
Byron G. Massialas. 1976, 20p
Prepared in cooperation with Exxon Corp., New York. For related documents, see IR 006 016, IR 006 019, and IR 006 021.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, MF$0.83 Only, Plus Postage.

Descriptors: Curriculum design, Daily living skills, *Decision making skills, Educational planning, Educational television, Futures(of Society), Grade 5, Grade 6, Humanistic education, *Intermediate grades, Relevance(Education), School environment, *Student participation.

To meet the condition of society that Toffler calls 'overchoice,' schools must redirect their role and provide a program that enables children and youth to develop and sharpen their decision-making skills--cognitive, evaluative, participatory, normative, and affective. All these skills can be developed and refined in the natural settings within the school, e.g., the classroom, the cafeteria, the principal's office, extracurricular activities, the school bus. Educators can utilize these settings to involve students in real-life experiences and to encourage student participation in decisions that will affect them. The task for the schools, then, is to plan systematically for decision-making experiences, and to accept the participatory work of students as legitimate school experience, meriting the same rewards as those given in traditional academic programs.

ED-157 512 Not available NTIS
Agency for Instructional Television, Bloomington, IN.
Essential Learning Skills in the Education of Citizens,
John J. Patrick, and Richard C. Remy. 1977, 36p
Prepared in cooperation with Exxon Corp., New York.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, MF$0.83 Only, Plus Postage.

Descriptors: Basic skills, Citizenship, Criteria, *Curriculum design, Daily living skills, *Decision making skills, *Educational planning, Educational strategies, Educational television, Intermediate grades, Lesson plans.

Five criteria derived from an original conception of basic education are used to appraise The Essential Learning Skills Television Project and to guide the proposal of ideas to strengthen the project. It is assumed that to prepare students to cope with the challenges of daily living and citizenship, curricula must stress acquisition of skills in decision-making, i.e., making, judging, and influencing decisions. Two kinds of decisions faced by citizens are featured--decisions about factual claims, and decisions about group governance. Factual decisions may require gathering and evaluating information to choose between competing claims. Decisions about group governance may require use of both facts and value judgments. A framework to guide teaching and learning of these skills is presented. Instructional objectives, teaching procedures, and sample lessons are formulated in terms of the decision-making framework.

ED-157 513 Not available NTIS
Agency for Instructional Television, Bloomington, IN.
Library Skills Instruction in the Fifth and Sixth Grades,
Karen P. Middleton. 1977, 31p
Prepared in cooperation with Exxon Corp., New York. For related documents, see IR 006 016-017 and IR 006 021.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, MF$0.83 Only, Plus Postage.

Descriptors: Curriculum design, Grade 5, Grade 6, Instructional design, Instructional materials centers, *Intermediate grades, *Library instruction, *Library skills.

Though librarians have always recognized the need to educate users in the two broad areas of library skills--location of resources and their use--there is little research on how such instruction can be best done. Theories that do exist seem far different from actual practice. Both practitioners and writers agree on one point: library skills should be taught as they are needed by the student. Whether this functional instruction should be 'formal' or 'informal' is a matter of debate among lirarians. Location skills are invariably stressed by librarians in instructional programs. The main location tools are the card catalog, the library's classification system, and publishd indexes. Use skills include: understanding the types of resources and the kind of information found in each, interpreting this information, selecting from it for one's own purposes, evaluating materials, and synthesizing ideas from various sources. The teaching of use skills should be recognized as the joint responsibility of teachers and librarians. Both location and use skills are closely connected to the reasoning and study skills elements of The Essential Learning Skills Television Project.

ED-157 514 Not available NTIS
Agency for Instructional Television, Bloomington, IN.
Some Notes on Research, Theory, and Production in Instructional Television,
Wilbur Schramm. 1977, 23p
Prepared in cooperation with Exxon Corp., New York.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, MF$0.83 Only, Plus Postage.

Descriptors: Attention span, Cognitive processes, *Educational television, Instructional design, *Media research, *Mediation theory, Research needs, Research utilization, Teacher attitudes.

This paper suggests some of the implications television producers can find in emerging currents of theoretical research. The effectiveness of television over a wide range of tasks has led in some cases to too much ETV being broadcast and has covered up the fact that television can make a unique contribution to certain tasks and should be used where possible for those. Teacher resistance to ETV can be countered by providing material that teachers themselves cannot provide and by increasing teacher control over content and scheduling. Problems of attention yield to change of pace, use of short segments, active viwer participation, and special attention-directing cues. Since television's code is mainly iconic, ETV can best be used to teach material that depends on that rather than on digital or analogue coding, and to increase students' skill in processing iconic material. The concreteness of television is emerging as a major determinant of its most productive uses, and its unintended effects are proving as worthy as intended effects of a producer's attention.

ED-157 515 Not available NTIS
Agency for Instructional Television, Bloomington, IN.
Teaching Mathematics: An Integration of Skill and Knowledge,
Philip Peak. 1977, 16p
Prepared in cooperation with Exxon Corp., New York. For related documents, see IR 006016-017 and IR 006 019.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, MF$0.83 Only, Plus Postage.

Descriptors: Cognitive processes, *Educational television, Elementary school mathematics, Grade 5, Grade 6, Intermediate grades, *Mathematics instruction, *Teaching methods.

Mathematics teaching is most effective when practice situations cover appropriate material, require constant thought, are transferable to new situations, make sense to the student, and are subject to analysis of components. Teachers must carefully seek the real source of errors and insure that students are as concerned with processes as with results. Levels of competence required of students should be consistent with the anticipated use. In such areas as decimals and derived results from measurements, students may be confused by nomenclature or explanations inconsistent with previous learning. Students must also be taught to apply their mathematics education to real life. Television and film can be used profitably here to present situations designed to be meaningful to a variety of students. Students should be encouraged to think about problems and impose interpretations on them based on their own experiences rather than simply using their minds as storage receptacles for information imposed on them from the outside.

ED-157 516 Not available NTIS
Washington Univ., St. Louis, MO. Center for Development Technology.
Motivations and Deterrents to Educational Use of 'Intelligent Videodisc' Systems,
Lester F. Eastwood, Jr. 12 Jan 78, 57p
Sponsored in part by National Inst. of Education, Washington, DC. Best copy available.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$3.50, MF$0.83 Plus Postage.

Descriptors: *Computer assisted instruction, Cost effectiveness, Diffusion, *Educational innovation, Educational technology, Individualized instruction, Instructional systems, Problems, Video tape recordings.
Identifiers: *Videodisc recordings.

The 'intelligent videodisc'--a combination of advanced microprocessor, display, and storage technology--holds the potential for developing into a powerful instructional delivery system. In an inexpensive package, it could combine advanced computer-aided instruction (CAI) software power and display capability for audio, video, and textual programming. Although it is attractive technically, this system's real contribution will be that CAI will fit the institutional structure of education for the first time. In contrast to existing CAI systems, this small-scale device could be purchased locally. Another unique attribute of this technology is its potential attractiveness to consumers. Despite these advantages, this new technology will face some of the same traditional barriers that have doomed other systems. It is likely that many teachers will retain their unwillingness to innovate using technology. Tight budgets will remain because of shrinking student populations and voter apathy. High cost might restrict software availability. This paper could serve as a platform for a discussion of needs and opportunities for a Federal role in promoting educational utilization of this system.

ED-157 517 Not available NTIS
American Film Inst., Washington, DC.
Study Guide for America at the Movies. An American Film Institute Production,
M. Jerry Weiss, and Helen S. Weiss. 1976, 30p
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$2.06, MF$0.83 Plus Postage. Also available from Cinema 5--16mm for lease or rental, 595 Madison Avenue, New York, 10022.

Descriptors: *Bibliographies, Filmographies, *Films, Film study, Language arts, Social studies, Study guides, Teaching guides.

Included in this guide are background material on the film, 'America at the Movies,' a movie inventory form, a Who's Who in Film list, a bibliography for each section of the film, a bibliography of films about America and Americans, and suggested activities for before and after viewing the film. There is also a list of the 83 films, of which segments appear in the movie, along with the dates of their original release.

ED-157 522 Not available NTIS
The Application of Job Redesign Concepts to the Management of Academic Research Libraries,
Charles Martell. 1974, 21p
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$1.67, MF$0.83 Plus Postage.

Descriptors: Definitions, Information dissemination, *Job analysis, Literature reviews, Models, *Organizational theories, Problems, Productivity, *Research libraries.
Identifiers: *Academic libraries.

Although the academic research library is service oriented and exists in a diverse, dynamic environment, the jobs within the system tend to be highly structured and mechanistic, more suitable for a production oriented organization. This paper discusses the concept of job dimensions in general and in relation to the academic research library, maladaptation of the library to its environment, and the implementation of job redesign techniques with potential benefits in terms of effectiveness of library operations, the satisfaction of employees, and the success with which it can recognize and adapt to significant shifts in its relevant task environment. A brief description of the process of implementing redesign in a library is presented. Also included are definitions of several terms as used in this report and a bibliography.

ED-157 539 Not available NTIS
Agency for Instructional Television, Bloomington, IN.
A Challenging Picture: The Status of ITV Utilization in Secondary Schools,
Paul Schneller. Mar 77, 27p AIT-RR-47
For related documents see IR 006 149-153 and IR 006 199.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$2.06, MF$0.83 Plus Postage. Also available from Agency for Instructional Television, Box A, Bloomington, IN 47401. (Free, until supply is exhausted).

Descriptors: Administrator attitudes, Educational philosophy, Educational problems, *Educational television, Inservice education, Secondary education, *State of the art reviews, Surveys, Teacher attitudes, Television research, Use studies.

The Agency for Instructional Television (AIT) solicited information from 28 individuals having responsibilities in various local, regional, and state instructional television organizations and agencies in the United States and Canada. AIT asked each individual to respond to three sets of questions on (1) the current status of secondary school television in the respondent's area, (2) a statement of the respondent's philosophy regarding television use in the secondary schools, and (3) examples of significant successes or failures in the respondent's area. Responses of agencies indicate that secondary school television is underused, under-

financed, and unexciting. Appendices include the letter requesting responses to the survey questions, and names of the 22 agency representatives responding to the survey. While the sampling procedures are not scientific, the data seem representative, based on AIT's knowledge of the field and active agencies. This initial probe is designed as a basis for further analysis and in-depth case studies.

ED-157 540 Not available NTIS
Agency for Instructional Television, Bloomington, IN.
School Television in the Archdiocese of New York,
Monica Dignam, and S. Holly Stocking. Jul 77, 23p AIT-RR-51
For related documents, see IR 006 149-153 and IR 006 199.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$1.67, MF$0.83 Plus Postage. Also available from Agency for Instructional Television, Box A, Bloomington, IN 47401. (Free, while supply lasts).

Descriptors: Case studies(Education), Catholic high schools, Closed circuit television, Educational problems, *Educational television, Education service centers, Elementary secondary education, Fixed service television, Religious education.
Identifiers: Yonkers(New York), New York.

Instructional Television of the Catholic Archdiocese of New York (ITV Center) is described as a fixed service broadcasting system which reaches 207 neighboring schools (188 elementary and 19 secondary), each of which is wired for closed circuit television. Production facilities, programming, and general administration of the ITV Center are described, as well as the operation and video facilities of three user high schools. The ITV Center identifies reasons for and possible solutions to the problem of high school teachers' reluctance to utilize the Center's programming.

ED-157 541 Not available NTIS
Agency for Instructional Television, Bloomington, IN.
The ITV Experience at Evanston Township High School,
Monica Dignam, and S. Holly Stocking. Jul 77, 28p RR-52
For related documents, see IR 006 149-153 and IR 006 199.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$2.06, MF$0.83 Plus Postage. Also available from Agency for Instructional Television, Box A, Bloomington, IN 47401. (Free, while supply lasts).

Descriptors: Case studies(Education), Closed circuit television, Course organization, Dial access information systems, Educational problems, *Educational television, Instructional innovation, Longitudinal studies, Secondary education, Use studies, Video cassette systems.

Having used instructional television (ITV) since 1955, the Evanston Township High School has been generally dissatisfied with its experiences with closed circuit television (CCTV), dial access ITV, and portable ITV for teachers' in-class use. It appears that future ITV use at Evanston will be minimal, due to wide resistance from students, faculty, and administrators. CCTV was useful for simultaneous large group communication, but prevented individual teacher control. Dial access ITV, while permitting students to work at their own pace, depended too heavily on student motivation, and did not permit teachers to monitor use. Although the portable video equipment requires some mechanical ability to operate, its mobility, relatively low expense, and potential as a tool for in-class evaluation and feedback make it the most likely form of future use of ITV at Evanston.

ED-157 542 Not available NTIS
Problems in Conducting Research on Computer-Based Simulation,
Alice M. Crawford. Apr 78, 19p
Paper presented at the Annual Meeting of the American Educational Research Association in Toronto on March 1978.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$1.67, MF$0.83 Plus Postage.

Descriptors: *Computer assisted instruction, Computer graphics, Data collection, Educational research, Input output devices, Instructional innovation, Performance based education, Screens(Displays), *Simulation, State of the art reviews, Technological advancement, Transfer of training.

Computer-based simulation (CBS) represents a unique utilization of computers for instruction that combines some of the best features of the technologies of simulation and computer assisted instruction (CAI). CBS grew out of an interest in testing the application of CAI to procedural and perceptual motor skills. With the sophisticated graphics capabilities currently available in many CBS systems, it is possible to program dynamic, two-dimensional representations of physical objects to be displayed on the screen of a computer terminal. Research suggests that advantages of CBS for training include increased trainee proficiency, time savings, cost effectiveness, and student acceptance. The overall recommendation for research in this area is to approach CBS training with a futuristic orientation to ensure maximal utilization of newly emerging technologies.

HRP-0018518/1GA PC **A06**/MF **A01**
Indiana Univ. at Bloomington. School of Public and Environmental Affairs.
Annotated Bibliography of Curriculum Materials for Area Agencies on Aging.
1976, 125p
Grant DHEW-AOA-90-751
See also Technical Assistance Manual, HRP-0027838.

Descriptors: Accessibility, Administration, *Curricula, Documents, Financial management, *Gerontology, Government agencies, Health care delivery organizations, Health care, *Health manpower education, Health occupations, Health planning, Health related organizations, Health resources, Information systems, Local government, Measurement, Methodology, Quality assurance, Sources, State government, Strategy.

This annotated bibliography, which can be used to develop curriculums designed to strengthen the capacity of area agencies in planning, managing, and evaluating programs, is a companion document to a technical assistance manual (HRP-0027838). The books and articles cited are concerned with social action planning, internal operations, financial management, and evaluation; general gerontological research references and source material pertaining to the specific problems of the aged are not included. The items included were selected because they were easily accessible and were considered to be representative of contemporary thought, relevant to the problems and needs of area agencies and therefore of use to project directors. It should be noted that the bibliography is not intended to be exhaustive; rather, it is meant to serve as an introduction to each of the subject areas covered. Instructions for obtaining the publications are included.

HRP-0027059/5GA PC **A09**/MF **A01**
Cincinnati Univ., OH. Coll. of Community Services.
Resource Manual From the Inner City Work-Study Institute for Health Professions Faculty.
1975, 178p

Descriptors: *Community relations, *Continuing education, Health care delivery organizations, *Health manpower education, Methodology, Ohio, State regions.

An institute for health professionals working in inner city areas was conducted at the University of Cincinnati in Ohio in 1975 to focus on the role of consumers in health care delivery and a community-university education model for health professions faculty. The 4-week institute provided an opportunity for 16 faculty members representing university programs in health administration, nursing, and health education to spend mornings in an inner city health facility in the Cincinnati area under the supervision of a faculty administrator or preceptor. In addition to experiential learning and the service element of the institute, participants engaged in seminars to study inner city health problems and health services. Evaluation by participants and their preceptors indicated that the education effort was effective. Participants completed such tasks as developing a questionnaire to determine patient utilization and satisfaction, organizing an appointment system, writing personnel policies and job descriptions, evaluating center billing and reimbursement experiences, revising nursing procedures for clinic and home care, developing a guide for a problem-oriented medical record system, working on a population research project, and proposing an educational career ladder. Curriculum models and teaching-learning resources are discussed. A bibliography on neighborhood health centers and appended additional information on the institute are provided.

HRP-0027646/9GA PC **A09**/MF **A01**
Western Center for Health Planning, San Francisco, CA.
Continuing Education for Health Systems Agency (HSA) Volunteers, A Model Plan.
Feb 78, 183p

Descriptors: *Continuing education, Curricula, *Health manpower education, Health occupations, Health planning agencies, Health related organizations, Health resources, *Health systems agencies, HSA(Health systems agencies), Methodology, On job training, Orientation(Training), Personnel management, Training programs, *Volunteers.

A comprehensive continuing education model stressing behavioral objectives for health systems agency (HSA) volunteers was prepared by the Western Center for Health Planning in San Francisco, Calif. The plan is designed for a hypothetical HSA which has a 30-member governing body and 5 standing committees and which requires review panels for certificate-of-need preparation. Volunteers for the standing committees and review panels are the target population. The continuing education goals, needs, terms, and implementation responsibilities are discussed. The process of planning by a continuing education committee involves establishment of principles and target populations; assessment of needs to define study topics, skills, format, and schedule; and provision for ongoing assessment. An outline of the education program includes descriptions of 15 study topics, an orientation program with resource and material requirements, and training workshops for specific roles, such as membership on review panels. An implementation schedule, a detailed implementation work schedule, and a proposed budget are provided. Evaluation instructions detail the information which must be gathered; 17 assessment standards to measure achievement of objectives, reasons for failure to meet goals, and the relationship among program variables; and recommendations for improvement. Two appendixes with a sample continuing education policy manual and a sample form for assessment of topics and interests, as well as an annotated bibliography are furnished.

HRP-0028104/8GA Not Available NTIS
North Carolina State Univ. at Raleigh.
Continuing Education -- The Role of a Professional Organization -- A Theoretical Framework.
Malcolm S. Knowles. 1978, 3p
Pub. in the Professional Medical Assistant v11 p24-26 May-Jun 78.

Descriptors: *Continuing education, *Health manpower education, Health related individuals, Health related organizations, Health resources.

A discussion of the role of a professional organization in continuing education is presented. Six traditional educational assumptions are contrasted with modern assumptions and these assumptions are then related to their implications for professional organizations. It is contended that the traditional assumptions are no longer functional, although they are still employed in the majority of teaching/learning institutions. It is pointed out that the traditional assumptions are pedagogical in their approach while the modern assumptions are andragogical in their approach. The modern assumption is that the adult has been motivated to identify a learning need and is seeking to fulfill that need

through learning experiences. It is suggested that the andragogical approach be the base upon which professional organizations build their continuing education programs. Professional organizations are said to be in need of 'crash programs' to train educators of adults. The need for learning how to address the needs of the adult learner is cited.

HRP-0028299/6GA PC **A03**/MF **A01**
Connecticut Univ. Health Center, Farmington. Student Committee on Geriatric Curriculum.
Health Care and the Elderly -- Educating the Future Professional. Proceedings.
1978, 32p
A Student Initiated Regional Conference to Discuss the Development of Curriculum Programs Related to the Special Health Care Needs of the Elderly.

Descriptors: Connecticut, Dental services, *Elderly persons, Gerontology, Health care services, Health care technology, Health care, *Health manpower education, Home health care services, Home nursing, Long term care, Methodology, Nursing, Personal health services, Rehabilitation, State regions.

The proceedings of a conference on undergraduate training in the management of elderly patients are presented. Presentations related to student interest in health care of the elderly, medical school curriculums on aging, the academic identity of geriatrics, the oral health status of the elderly and its relation to demands for and utilization of services, and education of the future professional in long-term and home care. Discussion groups covered such areas as career training and field programs in aging, programs in geriatric medicine, geriatric rehabilitation, and a triage program. Proposals related to establishment of a faculty-student committee charged with incorporating geriatrics topics into the medical curriculum and of an elective on aging; expansion of the beginning clinical medicine program to emphasize dealing with the elderly, chronic disease management, and home health care, and of the advanced clinical medicine course to include lectures on and clinical experience with diagnosis in the elderly, as well as rehabilitation techniques; promotion of an elective clerkship in geriatric medicine; and establishment of a preventive medicine program for senior citizens and of a multidisciplinary university liaison committee on aging. Two appendixes are supplied.

HRP-0028314/3GA Not Available NTIS
McGill Univ., Montreal (Quebec). School of Nursing.
Evaluation of Educational Programmes in Nursing.
Moyra Allen. 1977, 67p
Available from the World Health Organization, Publications Centre, 49 Sheridan Ave., Albany, NY 12210.

Descriptors: Health care services, Health care, *Health manpower education, *Nursing services, Personal health services, Quality assurance.

A discussion of the evaluation of educational programs in nursing is provided. The purpose of evaluation is to determine the worth of the approach, operations, and activities of the program in achieving its goals and objectives; the factors influencing the program; and the validity of the program goals. Criteria for evaluation are examined. Program relevance, relatedness, and accountability are considered essential. The design for evaluation provides for information collection on the nursing program over a period of time. The design then relates this information to the criteria and suggests a basis upon which the program's development can be evaluated. The stages of development of an educational program are delineated. The objectives of evaluation programs include: enabling each student to develop a continuous evaluation project for purposes of study, evaluation, and development; incorporating an evaluation system within new demonstration-type nursing programs; and promoting the study of comparative education in nursing. A discussion of each objective is supplied. Also considered are the nature of the evidence to be gathered, methods of data collection, and approaches to analysis and assessment.

HRP-0028315/0GA Not Available NTIS
University Medical Schools and the National Health Service.
Joseph M. Merrill. 1977, 34p
Available from PRODIST, Div. of Neale Watson Academic Publications, Inc., 156 Fifth Ave., New York, NY 10010.

Descriptors: Financing, Foreign countries, Guidelines, Health care delivery, Health insurance, *Health manpower education, Health manpower, Health planning, Health related organizations, Health resources, Institutions, Medical education, Methodology, National health insurance, Policies, Prepaid health care, Public health insurance, *Schools, Universities.

A discussion of university medical schools in Great Britain is provided, and an explanation of how those schools have fared in the National Health Service (NHS) environment is presented. The changes that led to NHS and the development of medical education in Britain are reviewed. The statutory responsibility of the NHS to make clinical resources available to university medical schools is discussed. It is noted that additional service costs were incurred by NHS to provide facilities for clinical teaching. The evolution of teaching hospitals into centers for specialty medicine is said to have contributed to the higher costs of teaching hospitals. In October 1975, a commission was appointed to determine the best use and management of the financial resources and manpower available to NHS. Morale was first on the list of problems identified by the commission. NHS is said to have lost its sense of purpose, and replaced humaneness in medicine with political bias. Medical education is dependent upon the NHS; it is suggested that universities and their medical schools should be able to participate in the development of NHS policy because that policy will affect them.

HRP-0028318/4GA Not Available NTIS
General Medical Council, London (England).
Basic Medical Education in the British Isles. Volume 1. General Section and School Profiles.
1977, 437p
See also Volume 2, HRP-0028319.
Available from Nuffield Provincial Hospitals Trust, 3 Prince Albert Road, London NW1 7SP, England.

Descriptors: Curricula, Foreign countries, Health care services, *Health manpower education, Health manpower, Health related organizations, Health resources, Institutions, *Medical education, Medical services, Personal health services, *Schools, Universities.

This book is one of two volumes concerned with the results of a survey of basic medical education in the British Isles. The survey, which was completed in 1976, dealt mainly with preclinical and clinical periods of study; however, information about the premedical year, where it was undertaken by students within a medical school, was also included. This volume is concerned in part with the curriculums of various schools. It is noted that in the preclinical years, there are great variations in the amount and organization of teaching in the classical disciplines. The amount of practical work required is also surveyed. It is noted that newer subjects have been included in the curriculum, including human genetics, behavioral sciences, human reproduction, and family planning. The amount of time allocated to these courses is said to vary greatly from institution to institution. The efforts of schools to coordinate the clinical experience of students is outlined. The movement to widen the students' experiences beyond the traditional clinical disciplines into the community outside the hospital is examined. A record of the activities, plans, and problems relating to undergraduate medical education in the British Isles in 1975 is provided. Much of the volume is devoted to 'school profiles', i.e., standard format descriptions of the 36 medical schools in the British Isles. The profiles consider the curricular and assessment systems of each school, provide further details of selected aspects, and review selection policies and procedures, curricular control and development, and the schools' problems and developments.

HRP-0028319/2GA Not Available NTIS
General Medical Council, London (England).
Basic Medical Education in the British Isles. Volume 2. Reports on the Teaching of the Component Disciplines/Specialties of the Medical Course.
1977, 436p
See also Volume 1, HRP-0028318.
Available from Nuffield Provincial Hospitals Trust, 3 Prince Albert Road, London, NW1 7SP England.

Descriptors: Curricula, Foreign countries, Health care services, Health care, Health manpower education, Medical services, Personal health services, Quality assurance.

This book is the second of two volumes concerned with the results of a survey of basic medical education in the British Isles. Separate reports on the teaching of the component disciplines of the medical courses are provided, with attention given to such areas as anesthetics; anatomy; biochemistry; chemical pathology, clinical chemistry; child health, pediatrics, human growth and development; communicable diseases; dermatology; general practice; genetics, including human genetics; geriatrics; hematology; immunology; medical ethics and forensic medicine; physiology; and psychiatry. A discussion of teaching arrangements is presented. The type of teaching and the average teaching time involved are considered. Teaching aims and objectives, as well as noteworthy teaching methods, are delineated. The use of in-course and end-of-course evaluation techniques is explained. Problems and developments in the teaching of the subject and in the teaching of the course (including those encountered in the organization and conduct of the teaching and those connected with teaching resources) are explored. Additional information is supplied about clinical teaching, the staff responsible for clinical teaching assignments, and course development and assessment.

HRP-0900268/4GA PC **A07**/MF **A01**
Bureau of Health Manpower, Hyattsville, MD. Program Management Information Systems Section.
Trends in Bureau of Health Manpower (BHM) Program Statistics -- Grants, Awards, Loans FY-1957-76.
Apr 78, 139p

Descriptors: *Financing, Government agencies, Health care delivery systems, Health legislation, *Health manpower education, Health occupations, Health related organizations, Health resources, Institutions, Law(Jurisprudence), National government, Nurses, Nursing, Physicians, *Schools, Students, Universities.

A summary of grant award trends from 1957 to 1976 for health manpower education and training programs of the Bureau of Health Manpower is designed to assist in program planning and in negotiations with institutions desiring to participate in programs. Major legislation of the period relating to program funding as well as types of programs and their eligibility requirements are summarized. The latter include: construction grants, student loans, formula grants, special project grants, scholarships, traineeships, project grants, contracts for special projects and other purposes, research and research training grants, fellowships, and modified research career development awards. Ninety-seven tables include: data on major programs, the number of institutions funded, and the amounts awarded; program grant data (construction, formula, special project, student loan, and scholarship grants) by school, type of training program, or college; school grant data by type of school; and other program data, including special grants of various types (e.g., family medicine traineeships and 2-year medical school conversion grants). Eight figures are supplied.

HRP-0900270/0GA PC **A14**/MF **A01**
Bureau of Health Manpower, Hyattsville, MD. Program Management Information Section.
Health Professions Schools -- Selected Bureau of Health Manpower (BHM) Support Data FY 1965-76.
Dec 77, 324p

Descriptors: Dentists, *Financing, *Health manpower education, Health manpower, Health occupations, Health related organizations, Health resources, Institutions, Medical education, National

government, Physicians, Professional personnel, *Schools, Students, Universities.

Bureau of Health Manpower data on program grants from 1965 through 1976 to schools of medicine, osteopathy, dentistry, optometry, pharmacy, podiatry, and veterinary medicine are presented. Selected programs authorized under the 1971 Comprehensive Health Manpower Training Act, the 1963 Health Professions Educational Assistance Act, the 1965 Health Professions Educational Assistance Amendments, and the 1968 Health Manpower Act include formula (capitation) grants, special project grants, financial distress grants, student loans, scholarships, construction awards, startup grants, grants for conversion of 2-year medical schools, and teacher-training grants. Data excluded relate to grants to allied health, nursing, and public health programs and to contracts and to health manpower education initiative awards. Schools are classified by discipline and alphabetically by State within each discipline; totals are provided for all schools and for each discipline. A map of DHEW regions is supplied.

HRP-0900335/1GA PC$19.00/MF **A01**
Bureau of Health Manpower, Hyattsville, MD. Div. of Associated Health Professions.
Allied Health Education Programs in Junior and Senior Colleges. Guidance Edition.
1978, 616p

Descriptors: *Allied health personnel, *Health manpower education, Health manpower, Health occupations, Health planning, Health related organizations, Health resources, Institutions, Medical education, *Schools, Universities, Vocational guidance.

To provide counselors with guidance-oriented information, a descriptive directory of nationwide health occupation education programs based on a 1975 survey by the American Society of Allied Health Professions is presented. A total of 5,053 active programs and 252 planned programs are included. All programs have been screened to assure that they conform to minimum standards for degrees, diplomas, occupational and vocational certificates, collegiate certificates, certificates of advanced standing, or continuing education certificates. Programs are indexed separately by State of location (both active and planned programs) and by occupational category and award level (separately for active and planned programs). Tabular information about each program pertains to program specialization, degrees, size, prerequisites and entrance requirements, and cost. Eight appendixes list abbreviations, footnotes, professional organizations, State Health Careers Councils, academic awards, supplementary occupational titles, survey instruments, and matching health occupations titles.

PB-292 943/8GA PC **A04**/MF **A01**
Armstrong Cork Co., Lancaster, PA.
Power Plant Training Course - Steam Accessories.
Technical bulletin.
Mar 61, 54p ICA-TB-16
Sponsored in part by International Cooperation Administration, Washington, DC. Office of Industrial Resources.

Descriptors: *Education, *Control equipment, *Boilers, Instrumentation, Steam traps, Separators, Flow regulators, Accessories.
Identifiers: Developing country application.

This presentation on Steam Accessories was developed to help train employees to understand facts of importance about accessories. To avoid confusion, no attempt has been made to cover all the accessories of all manufacturers. The information given here does include A.S.M.E. types — a knowledge of which will help anyone understand accessories of the same types.

PB-293 143/4GA PC **A99**/MF **A01**
Federal Communications Commission, Washington, DC. Broadcast Bureau.
Employment in the Broadcasting Industry - 1978. Report on Female and Minority Groups Employment in Radio and Television Broadcast Stations.
Final rept. 31 Dec 77-31 Mar 78.
Dec 78, 849p FCC-BC-395-78
See also report dated Dec 77, PB-278 712.

Descriptors: *Employment, *Females, *Minority groups, *Television broadcasting, *Radio broadcasting, Mass communication, Radio stations, Television stations, Negroes, American Indians, Ethnic groups, Statistical data, Salaries, Metropolitan areas, Tables(Data), States(United States), Surveys.
Identifiers: Geocoding, Asian Americans, Spanish surname Americans, Full time workers, Part time workers, Occupations.

All broadcast licensees having 5 or more full-time employees are required to file an annual employment profile report (FCC Form 395). This report (the seventh in a series) includes separate entries for the number of full-time and part-time employees and shows the number of women and minority group employees (Negro, Oriental, American Indian, and Spanish-surnamed American). In the summaries that follow, the nine job categories have been condensed to two, as follows: Higher Pay, includes Officials and Managers, Professionals, Technicians and Sales Workers; Lower Pay, includes Office and Clerical, Craftsmen (Skilled), Operatives (Semi-skilled), Laborers (Unskilled) and Service Workers.

PB-293 168/1GA PC **A05**/MF **A01**
Stanford Univ., CA. Graduate School of Business.
An Empirical Assessment of the Process and Outcome of an Organizational Change Project Aimed at Improving the Quality of Work Life.
Final rept.,
Jerry I. Porras, and Reuben H. Harris. 15 Nov 77, 98p DLMA-21-06-77-04-1
Grant DL-21-06-77-04

Descriptors: *Organization theory, *Quality of life, Performance evaluation, Attitudes, Impacts, Group dynamics, Surveys, Statistical analysis, Correlation, Productivity, Job satisfaction, Motivation, Industrial relations, Psychology, Management training, Leadership, Personnel development, Food services.
Identifiers: *Work environment, *Organizational change, Organizational development, Quality of worklife.

The report describes a three-year assessment of a planned change program aimed at improving the quality of work life in a national food service organization. Intervention activities were conducted with both food service workers and managers in a large number of geographically disbursed units. Both attitudinal and performance measures were used to assess the impact of the change program.

PB-293 221/8GA PC **A07**/MF **A01**
New Mexico Employment Security Commission, Albuquerque. Research and Statistics Section.
New Mexico Occupational Manpower Needs to 1985.
May 77, 143p

Descriptors: *Manpower, *Requirements, *New Mexico, Employment, Forecasting, Industries, Manpower utilization, Demand(Economics), Job analysis, Trends.
Identifiers: *Occupational surveys, Labor market.

The report includes three general types of information: (1) data and analysis of total and industrial sector employment, 1975-1985, (2) data and analysis in detail of selected occupational employment, 1975-1985, and (3) a brief explanation of the methodology and limitations in the system used to develop these projections.

PB-293 228/3GA PC **A08**/MF **A01**
Linton and Co., Inc., Washington, DC.
Seven Years Later: The Experiences of the 1970 Cohort of Immigrants in the U.S. Labor Market.
Final rept.,
David S. North. 15 Jun 78, 168p* DLMA-20-11-74-21-3
Contract DL-20-11-74-21
Prepared in cooperation with New TransCentury Foundation, Washington, DC. Center for Labor and Migration Studies, and TransCentury Corp., Washington, DC.

Descriptors: *Employment, *Manpower utilization, *Population migrations, Demographic surveys, Income, Earnings, Experience, Occupational mobility, United States, Ethnic groups, Characteristics, Statistical analysis, Government policies, Females, Males.
Identifiers: *Immigrants, *Labor force participation, Work experience, Working hours, Illegal immigrants, Occupational surveys.

Each year about 400,000 legal immigrants enter the U.S., and each year about 222,000 immigrants (net) enter the labor market. The demographic profile of the legal immigrants is close to that of the population at large, and is thus different from that of illegal immigrants (who tend to be young, single males). In the U.S., immigrants earn more money and work fewer hours per week than they did in their homeland, and, in the case of women, quickly earn as much as their peers; the men appeared to be on their way to earnings equity with their peers. There are substantial occupational group movements, many of which initially at least are downwards. The study is based on published and unpublished government statistics and on a survey of the 1970 cohort of immigrants.

PB-293 242/4GA PC **A03**/MF **A01**
Boise State Univ., Idaho. Center for Research, Grants and Contracts.
Japanese American Contributions to Idaho's Economic Development,
Robert C. Sims. 10 May 78, 35p

Descriptors: *Economic development, *Idaho, *Ethnic groups, Citizen participation, Employment, Culture(Social sciences), Sociology, History, Relocation, Discrimination, Railroads, Manpower, Economic impact, Agriculture.
Identifiers: *Japanese Americans, Labor supply, Acculturation, Achievement, Agricultural personnel.

The report presents a history of the early Japanese immigrants in Idaho and shows how Japanese Americans throughout the years have become extensively assimilated into the state's economy and culture.

PB-293 247/3GA PC **A12**/MF **A01**
Cornell Univ., Ithaca, NY. Dept. of Sociology.
Participation of Disadvantaged Groups in Employment and Training Programs (CETA) in New York and Pennsylvania.
Final rept.,
Sharon L. Harlan. Feb 79, 260p DLMA-91-36-77-49-1
Grant DL-91-36-77-49

Descriptors: *Disadvantaged groups, *Employment, *New York, *Pennsylvania, National government, Education, Experience, Females, Minority groups, Manpower utilization, Unemployment, Personnel selection, Statistical analysis, Federal assistance programs, Characteristics, Theses.
Identifiers: *Comprehensive Employment and Training Act, *Participation, Employment programs, Manpower development, Administrative policy, Public service occupations.

Data on CETA participant characteristics and characteristics of the unemployed labor force in NY and PA counties are used to calculate the participation rates of women, minorities, the poor, and adults with low education in CETA Title I training and work experience and Title VI public service employment. The impact of national manpower policy decisions and the effects of community social characteristics and local CETA administrative procedures on participation rates are examined. The major results are: (1) the participation rates of all disadvantaged groups are higher in Title I than in public employment; (2) community affluence has a large positive effect on the participation of disadvantaged groups; (3) women receive proportionately fewer public jobs where the local unemployment rate has recently risen; (4) political competition is associated with higher minority CETA participation; and (5) the effect of community affluence is mediated by local CETA Direc-

tor's manpower experience, methods of client recruitment, and types of organizations used to deliver manpower services. Policy changes to increase the CETA participation of disadvantaged groups are suggested.

PB-293 259/8GA PC **A03**/MF **A01**
Minnesota State Dept. of Education, St. Paul.
Governor's Conference on Declining Student Enrollment (Minnesota).
Final rept.
1978, 32p

Descriptors: *Schools, *Students, *Minnesota, Education, Meetings, Instructors, Tables(Data), Trends, Financial management.

The Governor of Minnesota, Rudy Perpich, in recognition of the many varied and complex issues arising from the steady decline in school district enrollment in all parts of Minnesota, commissioned a Governor's Conference on Declining Student Enrollment, which was held on April 17, 1978. The major goal of the conference was to achieve a broader degree of understanding among the public concerning the impact of reduced student enrollment in Minnesota's school districts. Experts from the areas of school finance and educational planning presented an overview of the impact of declining enrollment from the national, state, and local perspectives. Problems were analyzed and possible future alternatives were explored. The following pages contain charts and graphs from the conference presentations and other background information gathered by the Department of Education concerning population trends, school finance, information on professional staff, teacher production trends, recent state planning legislation, and other pertinent data.

PB-293 266/3GA PC **A04**/MF **A01**
CISA, Inc., Baltimore, MD.
Black Youth and the Labor Market: The Unemployment Dilemma.
Final rept. Aug 78-Mar 79,
Gail E. Thomas. Mar 79, 56p ASPER/CON-78/0113/A
Contract DL-J-9-M-8-0113

Descriptors: *Youths, *Negroes, *Unemployment, Minority groups, Males, Females, Education, Low income groups, Government policies, Manpower utilization, Upgrading, Management training, Vocational guidance.
Identifiers: Dropouts.

The paper examines the current problem of black youth unemployment from a theoretical perspective. Traditional sociological and economic theories applicable to the problems of unemployment and occupational and status achievement are initially reviewed. Next, the concept of 'sponsorship mobility' is utilized and elaborated as a policy approach to dealing with the problem of black and disadvantaged minority youth unemployment. The major hypothesis advanced and that forms the basis of the policy approach suggested is that: An improvement in employment opportunity for black and other disadvantaged youth can be facilitated through the establishment of functional support systems and sponsorship groups that effectively mediate the relationship between disadvantaged youth and the employment structure. Various strategies for formulating support systems and sponsorship groups are offered.

PB-293 272/1GA PC **A11**/MF **A01**
Westat, Inc., Rockville, MD. Research Div.
Job Search and Relocation Assistance Pilot Project (JSRA). Second Analytical Report. Phase II and Project-to-Date.
Interim rept. May 77-Jan 78,
John K. Herzog, Cilla J. Reesman, Ira M. Priesman, Patricia D. Smith, and Ruth Ann Holt.
15 Aug 78, 230p DLMA-20-24-75-38-3
Grant DL-20-24-75-38
See also report dated Oct 77, PB-273 976.

Descriptors: *Relocation, *Personnel selection, Employment, Services, Occupational mobility, Population migrations, Expenses, Accounting, Cost analysis, Evaluation, Characteristics, Project control, Information services, Personnel replacement, Skilled workers, Supply(Economics), National government.
Identifiers: *Job Search and Relocation Assistance Pilot Project, Participation, Employment programs, Job development.

The purpose of the project is to demonstrate the feasibility of providing out-of-area job search and relocation assistance to Employment Service applicants who are unable to find suitable employment in their home areas and who are willing to relocate. During the 9-month period covered in the report, 2,230 persons were enrolled and 520 people relocated at a total average cost of $1,084. The characteristics of dropouts, relocatees, controls, levels of activity, costs, early follow-up data, and changes in service delivery are reported. Appendices include project history and detailed operating data.

PB-293 361/2GA PC **A03**/MF **A01**
Westat, Inc., Rockville, MD. Research Div.
Employer Views of JSRA (Job Search and Relocation Assistance), A Preliminary Report.
Rept. for Apr 76-Oct 78,
Cilla J. Reesman. Nov 78, 27p DLMA-20-24-75-38-2
Grant DL-20-24-75-38

Descriptors: *Relocation, *Personnel selection, Employment, Services, Attitudes, Industries, Experience, Salaries, Fringe benefits, Occupational mobility, Personnel replacement.
Identifiers: *Job Search and Relocation Assistance Pilot Project, Employer attitudes, Employment programs, Job development, Promotion(Occupational).

This report is the first in a series of brief, single subject reports on aspects of the Job Search and Relocation Assistance Pilot Project, conducted in 32 Atlanta Region Employment Service offices. Preliminary analysis of interviews with the employers of JSRA Relocatees indicates high levels of employer satisfaction with employees obtained through JSRA, as well as with the concept of worker relocation. There are some indications that JSRA has encouraged expanded use of the Employment Service by employers who had not heretofore listed particular types of jobs with the E.S. This may be the result of job development activities by JSRA offices.

PB-293 474/3GA PC **A09**/MF **A01**
National Center for Productivity and Quality of Working Life, Washington, DC.
Employee Incentives to Improve State and Local Government Productivity.
Mar 75, 186p CP-75015
Supersedes PB-233 057.

Descriptors: *Productivity, *Incentives, State government, Local government, Government employees, Awards, Bonuses, Payment, Motivation, Technology innovation, Performance standards, Personnel development, Punishment(Psychology), Surveys.

The document reports on state and local government usage of employee incentives. The report details the types of incentives used by state and local governments and gives examples of some programs. Guidelines are given for the design, implementation, and evaluation of employee incentive programs. The report concludes with a summary of findings and recommendations. This information was collected through surveys of state and local governments, and questionnaires used in the surveys are included in the appendix.

PB-293 475/0GA PC **A02**/MF **A01**
National Center for Productivity and Quality of Working Life, Washington, DC.
Employee Attitudes and Productivity Differences Between the Public and Private Sector.
Feb 78, 23p

Descriptors: *Attitude surveys, *Productivity, Government employees, Personnel, Industries, Comparison, Organizations, Supervisors, Job satisfaction, Incentives, Fringe benefits, Performance.

This report is the result of data collected from surveys with 10 public sector organizations and 11 private companies. The data compare the answers of several thousand public and private sector employees to 29 attitude questions, all of which are believed to be relevant to the productivity of the organizations involved. The report distinguishes between the responses of employees and managers to look separately at managers in their role as employees rather than in their supervisory roles. The results reveal a number of apparently significant differences between public and private sector employees, which in turn may have important implications for differences in the methods of productivity improvement in public and private sector organizations. Survey questions cover overall organizational effectiveness, job satisfaction, quality of supervision, understanding of job requirements, perceived equity of employment situation, and rewards for performance.

PB-293 504/7GA PC **A04**/MF **A01**
National Center for Productivity and Quality of Working Life, Washington, DC.
New Technologies and Training in Metalworking,
A. Harvey Belitsky. 1978, 64p*

Descriptors: *Technology innovation, *Industrial training, *Metal industry, Controllers, Calculators, Computer programming, Manufacturing, Machining, Metal cutting, Machine tools, Numerical control, Metal working, Powder metallurgy, Maintenance, Purchasing, Skilled workers, Production methods, Personnel development, Automation.
Identifiers: *Skill development, Training, Case studies.

Manufacturing technology, especially small-batch production involving mainly metal cutting and machining, is economically critical because of (1) the metalworking sector's significance to other manufacturing industries; (2) the apparent lag in introducing numerically controlled machines and other appropriate technologies in many U.S. machine shops; and (3) the possibility of achieving impressive productivity gains through a large-scale shift to newer metalworking technologies. The report is organized into three parts. Parts I and II deal with technology and training, and draw upon several public and private surveys and studies, plus extensive telephone and written contacts with knowledgeable persons in industry, unions, trade and professional associations, and training institutions. Part III consists of four case studies of training in metalworking.

PB-294 262/1GA PC **A09**/MF **A01**
Bangladesh National Scientific and Technical Documentation Centre, Dacca.
A Directory of Scientists and Technologists of Bangladesh,
Ahsan A. Biswas. Feb 76, 200p BANSDOC-BIBLIO-113
Sponsred in part by Agency for International Development, Washington, DC.

Descriptors: *Scientists, *Bangladesh, *Directories, Professional personnel, Engineers, Librarians, Instructors, Biographies.
Identifiers: Developing country application.

This directory contains over 1500 entries of scientists and technologists in Bangladesh. Entries have been divided into 23 sections on a broad subject basis and have been arranged according to Universal Decimal Classification. Bibliographic data has been provided for each entry.

PB-294 407/2GA PC **A16**/MF **A01**
Bureau of Labor Statistics, Washington, DC. Div. of Local Area Unemployment Statistics.
State, County and Selected City Employment and Unemployment, January-December 1978. Supplement.
Apr 79, 366p BLS/PWEDA/SP-79/01-SUPPL
Supplement to report dated Mar 79, PB-293 080.

Descriptors: *Manpower, *Unemployment, *Employment, *Economic surveys, States(United States), Counties, Municipalities, Salaries, Education, Statistical data, National government.
Identifiers: Labor force, Local studies.

The report contains labor force and unemployment estimates for States and counties for use in administration of economic assistance programs of the U. S. Department of Commerce.

PB-294 408/0GA PC **A19**/MF **A01**
Bureau of Labor Statistics, Washington, DC. Div. of Local Area Unemployment Statistics.
CETA Area Employment and Unemployment, January-December 1978. Supplement.
Apr 79, 434p BLS/CETA/SP-79/01-SUPPL
Supplement to report dated Mar 79, PB-293 081.

Descriptors: *Manpower, *Unemployment, *Employment, *Economic surveys, States(United States), Counties, Municipalities, Salaries, Education, Statistical data, National government.
Identifiers: Labor force, Comprehensive Employment and Training Act, Local studies.

The report contains labor force and unemployment data for CETA prime sponsors, program agents, and areas of substantial unemployment.

PB-294 425/4GA PC **A03**/MF **A01**
Fondo Colombiano de Investigaciones Cientificas y Proyectos Especiales, Bogota.
Cellandria Environmental Education Project,
Gladis A. Bottaro Marques. 1979, 27p
Sponsored in part by United Nations Educational, Scientific and Cultural Organization, New York, and Agency for International Development, Washington, DC. Proceedings of the International Seminar on Appropriate Technology in Education, Bogota, Colombia, January 29-February 2, 1979.

Descriptors: *Schools, *Instructional materials, Disadvantaged groups, Communities, Adults, Children, Learning, Citizen participation.
Identifiers: Developing country application.

The report is based on the belief that by strengthening the role of education the school will be able to function as a center of resources for the whole community and it will aid the social and educational rehabilitation of neighborhoods. The objectives in the project were to get the community to really participate in the development of their town, make their habitat less aggressive, and achieve a true community relationship. Emphasized in the project were the two technologies considered appropriate for education: (1) open curriculum, and (2) the audio-visual teaching project for educational communication. An analysis of the experiences of the project is included in the document.

PB-294 576/4GA PC **A03**/MF **A01**
Vanderbilt Univ., Nashville, TN. Graduate School of Management.
A Program for Achieving Better Project Management in Developing Countries,
Morris Solomon. 18 Sep 74, 36p
Contract AID/csd-3156

Descriptors: *Project management, *Developing countries, *Management training, Organization theory, Industrial training, Personnel development, Supervision, Management methods, Instructional materials.
Identifiers: Training, Skill development, Developing country application.

The paper outlines a world strategy for upgrading the project management capability of the developing countries, with particular attention to training. The strategy calls for: indigenous interdisciplinary training teams for each interested country; training with organizational focus; work on actual projects as a part of training; continuing participation of top management of organizations that are targeted; support of selected national training teams by regional centers of excellence; use of learning packages as a basis for training; a learning stance by trainers; and adaptation of learning packages to local needs and conditions.

PB-294 582/2GA PC **A03**
Massachusetts Inst. of Tech., Cambridge. Sea Grant Coll. Program.
A Report on the Massachusetts Institute of Technology Sea Grant College Program.
Annual rept. 1 Jul 77-30 Jun 78.
Dec 78, 42p MITSG-79/2, NOAA-79031312
See also COM-74-11342.

Descriptors: *Education, *Oceanography, Research projects, Universities, Mineral deposits, Offshore drilling, Pollution, Project planning, Marine engineering, Marine biology, Massachusetts.
Identifiers: *Sea Grant program, Marine resources.

The MIT Sea Grant College Program annual report is a summary of one year's work. The report has been framed against some of the recommendations made by the Stratton Commission to aid in measuring progress and achievements against national goals. The research projects, advisory services and education programs during the past year are described. Details are outlined on the expenditures and administration during fiscal year 1978.

5J. Psychology (Individual and Group Behavior)

AD-A064 867/5GA PC **A08**/MF **A01**
Michigan Univ., Ann Arbor. Human Performance Center.
Perceptual Interaction Between Stimulus Dimensions as the Basis of Dimensional Integrality.
Doctoral thesis,
Patricia Somers. Sep 78, 153p Rept no. TR-61
Contract N00014-76-C-0648

Descriptors: *Perception(Psychology), *Sizes(Dimensions), *Stimuli, Integrals, Interactions, Test methods.
Identifiers: Dimensions.

This paper describes and tests a new psychological theory of dimensional integrality. Integrality refers to the phenomenon of physically independent dimensions appearing fused into a single perceptual attribute such that the physically separable dimensions are not perceptually separable. The theory proposes that all stimuli are perceived as combinations of perceptually independent dimensions, but that for integral stimulus sets the perceptual dimensions do not correspond to the physically independent dimensions. Integrality is demonstrated psychophysically by interaction in psychological similarity space between physically independent dimensions.

AD-A064 900/4GA MF **A01**
Naval Postgraduate School, Monterey, CA.
Questionnaire Results on the Prospects for Soviet Development of Parapsychology for Military or Political Purposes.
Master's thesis,
James David Bray. Dec 78, 70p
Availability: Microfiche copies only.

Descriptors: *Parapsychology, *Political science, *Military intelligence, Social sciences, National security, Statistical analysis, Questionnaires, USSR, Data processing, Theses.

This thesis examines the judgements of experts as to the potential threat the development of parapsychology would play in the national security of the United States. In order to accomplish this, a questionnaire distributed to authors of articles on parapsychology was analyzed using the Statistical Package for the Social Sciences (SPSS). In addition, a section is included on the history of Soviet studies in this field. Recommendations are made for areas requiring further investigation. (Author)

AD-A064 963/2GA PC **A02**/MF **A01**
Walter Reed Army Inst. of Research, Washington, DC.
Time-of-Day Clocks and SKED: Techniques and Applications,
Timothy F. Elsmore . 1977, 3p
Availability: Pub. in Behavior Research Methods and Instrumentation, v9 n2 p231-232 1977.

Descriptors: *Test construction(Psychology), *Timing devices, Clocks, Algorithms, Computer applications, Experimental data, Data processing, Subroutines, Reprints.
Identifiers: SKED computer program.

No abstract available.

AD-A064 975/6GA PC **A03**/MF **A01**
Maryland Univ., College Park. Dept. of Psychology.
Behavioral Interactions Under Noxious Environments.
Rept. no. 2 (Annual), 1 Sep 77-31 Aug 78,
James E. Barrett. 30 Sep 78, 40p
Contract DAMD17-77-C-7001

Descriptors: *Behavior, Interactions, Environments, *Shock, Electricity.
Identifiers: Noxious environments.

This program has focused on an analysis of behavior and behavioral interactions under conditions where the main controlling consequences are noxious events (electric shock). Throughout the past year the primary efforts have been on understanding specific factors contributing to the varied effects of noxious environments on behavior. (Author)

AD-A065 014/3GA PC **A04**/MF **A01**
Navy Personnel Research and Development Center, San Diego, CA.
Catastrophe Theory in the Behavioral Sciences.
Interim rept.,
W. A. Hillix, Ramon L. Hershman, and Fletcher D. Wicker. Feb 79, 69p Rept no. NPRDC-TR-79-8

Descriptors: *Behavior, Catastrophic conditions, Theory, Models, Neural nets.

Catastrophe theory is a recent and rich development in mathematics. However, its possible application to the behavioral sciences is uncertain and the source of considerable controversy. The theory was reviewed with emphasis on its usefulness in the behavioral sciences. Previous attempts to apply catastrophe theory were examined and criticized. A bibliography of publications in catastrophe theory was compiled, and three new investigations were designed to test the theory's applicability. A laboratory study of reversible apparent movement was the most successful of these; some aspects of the data showed properties that were in accord with expectations derived from a cusp catastrophe. Computer simulations of the behavior of hypothetical neural nets revealed selected catastrophic properties and suggested possible connections between mutually inhibitory systems and the phenomena of perceptual reversals. (Author)

AD-A065 040/8GA PC **A04**/MF **A01**
RAND Corp., Santa Monica, CA.
Individual Differences in Knowledge Acquisition from Maps.
Technical rept. Nov 77-May 78,
Perry W. Thorndyke, and Cathleen Stasz. Jan 79, 61p Rept no. RAND/R-2375-ONR
Contract N00014-78-C-0042

Descriptors: *Map reading, *Learning, Comprehension, Retention(Psychology), Strategy, Performance(Human), Attention, Coding, Spatial distribution, Information processing, Teaching methods.

This study investigated the strategies people use to acquire knowledge from maps. Three expert and five novice map users studied a map and provided verbal protocols of their study behavior. Analysis of the learning protocols suggested four categories of processes that were invoked during learning: attention, encoding, evaluation, and control. Large individual differences in both performance and strategy usage were observed in this task. Analyses of the performance and strategy data revealed that the use of certain strategies in each category, particularly those used for encoding spatial information, was most predictive of learning performance. In addition, good learners differed from poor learners in their ability to evaluate their learning progress and to focus their attention on learned information. An analysis of the performance of map-using experts suggested that success in learning depended on strategies and not on familiarity with the task domain or materials. The implications of these results for training extertise in map learning are discussed. (Author)

AD-A065 077/0GA PC **A02**/MF **A01**
Naval Submarine Medical Research Lab., Groton, CT.
Human Information Processing in Navigational Displays,
Kevin Laxar, and Gary M. Olson. 13 Mar 78, 12p
Rept no. NSMRL-841

Availability: Pub. in Jnl. of Applied Psychology, v63 n6 p734-740 1978.

Descriptors: *Humans, *Information processing, *Orientation(Direction), Display systems, Navigation, Submarines, Spatial distribution, Reprints.

Studies of abstract picture-sentence verification tasks have shown that people exhibit directional biases in the way they think about spatial orientation; for example, they decide faster about diagrams involving the term right than the term left. The roles of these and other human limitations in processing displays of target and own-ship movements were evaluated with two groups (experienced and inexperienced) of seven submarine officers each. In two 1-hour sessions, each officer made 192 judgments of computer-generated diagrams representing the linear movements of own ship and target ship. The standard picture verification task paradigm was used to measure response times. Direction of motion, right or left, per se did not reliably influence response time, but the subject's level of experience, amount of practice at the task, display truth value, stimulus congruity, and stimulus-response compatibility did. The study demonstrates how the effects of factors isolated through basic research can be demonstrated in operationally relevant tasks. Implications for training are discussed. (Author)

AD-A065 115/8GA PC **A03**/MF **A01**
Naval Health Research Center, San Diego, CA.
The Pueblo Incident: A Follow-Up Survey Conducted Eight Years after the Release of the USS Pueblo Crew from North Korea.
Final rept.,
Raymond C. Spaulding. Oct 78, 33p Rept no. NAVHLTHRSCHC-78-37
Presented at the World Congress of Psychiatry(6th), Honolulu, HI. 28 Aug-3 Sept 77.

Descriptors: *Prisoners of war, *Adjustment(Psychology), Health surveys, Naval personnel, Survival(Personnel), Military medicine, Personality tests, Stress(Psychology), Neuroses, Questionnaires, Signs and symptoms, Military psychology, North Korea.
Identifiers: Pueblo incident, AGER 2 vessel.

The 81 surviving USS Pueblo crew members were given extensive medical and psychiatric examinations on December 23, 1968. This was within 48 hours of their release after eleven (11) months' incarceration by the North Koreans. The last group medical examination of the Pueblo crew was in April 1969. A questionnaire was mailed in early 1977 to the Pueblo crew members. The questions requested information regarding their health and adjustment since April 1969. The incidence and scope of symptoms and diseases, morbidity, disability, marital adjustment and current life styles was addressed. The survey inquired into the following major areas: (a) interim medical history and chronological development of illness, if applicable; (b) occupational experiences, (c) educational experiences; (d) marital history including children; (e) residential history; (f) interpersonal relationships; (g) military experience; and (h) attitudinal changes as influenced by the incarceration experience. x

AD-A065 121/6GA PC **A03**/MF **A01**
Validated Instruction Associates, Inc., Albion, MI.
Patterns of Approval in Work Groups: Treating the Sexes Equally.
Interim technical rept. 1 Nov-31 Dec 78,
Kirsten Hinsdale, and J. David Johnson. Dec 78, 35p Rept no. TR-5
Contract N00014-77-C-0625

Descriptors: *Social psychology, *Jobs, Group dynamics, Employee relations, Acceptability, Naval personnel, Enlisted personnel, Males, Females, Reaction(Psychology), Behavior, Equalization, Attitudes(Psychology), Sex.
Identifiers: Women, Stereotypes.

This study investigated patterns of approval and disapproval for stereotypically feminine and masculine behavior in work groups. Accordingly, a sample of 216 male and female Navy enlisted personnel were given a series of behavioral 'contingency statments' illustrating the masculine and feminine traits on the Bem Sex Role Inventory. Subjects were asked to complete the statements by rating the extent to which they would encourage or discourage each behavior in one of four work group members--a male subordinate, female subordinate, male co-worker, or female co-worker. It was found that approval patterns did not vary according to the sex of the worker. However, significant effects were observed with respect to the sex of respondent and the status of the worker as a subordinate or co-worker. Specifically, female respondents were more likely than male respondents to encourage feminine behaviors, and coworkers were more likely than subordinates to receive encouraging responses to feminine behaviors. No significant differences were found on these variables for masculine behavior. It is concluded that sex-specific patterns of approval are not apparent in the Navy system; on the contrary, there is a small tendency to encourage a given behavior more strongly when it is cross-sex. These findings are interpreted in terms of their consistency with previous research on Navy populations.

AD-A065 142/2GA PC **A03**/MF **A01**
Decisions and Designs, Inc., McLean, VA.
Discounting in Multicausal Attribution: The Principle of Minimal Causation.
Technical rept.,
Harriet Shaklee, and Baruch Fischhoff. Aug 78, 35p
Contract N00014-78-C-0100, ARPA Order-3469
Prepared in cooperation with Perceptronics, Inc., Eugene, OR, Rept. no. PTR-1060-78-8. Report on Advanced Decision Technology Program.

Descriptors: *Decision making, *Statistical inference, Heuristic methods, Command and control systems.
Identifiers: *Causality principle.

A series of three experiments investigated the effect of information about one possible cause of an event on inferences regarding another possible cause. Experiment 1 showed that the presence of a second possible cause had no effect on the perceived probability that the first possible cause influenced the event. However, if the second cause is cited as having definitely influenced the event, then the probability that the first possible cause influenced the event is reduced. Experiment 2 showed that the presence of a second possible cause does reduce the judged probability that a given cause was present at the time of an event. The final experiment revealed that the tendency (found in Experiment 1) to discount the involvement of the first cause given the involvement of a second cause diminishes when subjects were more highly motivated and confronted with their own discounting. These results are inconsistent with Kelley's account of discounting and provide some support for a proposed explanatory heuristic, the principle of minimal causation. Users of this principle analyze a situation until they have identified a minimal set of sufficient causes; other possible causes are ignored or dismissed. (Author)

AD-A065 154/7GA PC **A03**/MF **A01**
Arizona Univ., Tucson. Dept. of Psychology.
The Relation of Topics and Themes in Naturally Occurring Technical Paragraphs.
Technical rept. no. 1, 1 Jan-30 Aug 78,
David E. Kieras. 30 Jan 79, 47p
Contract N00014-78-C-0509

Descriptors: *Reading, Comprehension, Technical writing.

There is a distinction between two kinds of thematic information in a passage: the main item, or topic, and the main idea, or theme. Although these are distinct kinds of information, the main idea should be about the main item. Separate groups of subjects generated title-like noun phrase identifications of topics, and simple sentence statements of themes, for paragraphs from Scientific American. Most theme statements contained one of the topics, with a frequency related to the popularity of the topic. Furthermore, theme statements most often contained a topic as the surface sentential subject. These results show that although identifying the main item and identifying the main idea are different tasks with different processes involved, there is a close correspondence between the two types of thematic information identified by readers. (Author)

AD-A065 229/7GA PC **A03**/MF **A01**
American Univ., Washington, DC. Dept. of Psychology.
The Structure of Choice,
Alan Silberberg, Bruce Hamilton, John M. Ziriax, and Jay Casey. 20 Jan 78, 34p
Grant PHS-MH-22881
Availability: Pub. in Jnl. of Experimental Psychology: Animal Behavior Processes, v4 n4 p368-398 1978.

Descriptors: *Decision making, *Test construction(Psychology), Random variables, Reaction(Psychology), Experimental design, Reprints.
Identifiers: Choice making.

No abstract available.

AD-A065 257/8GA PC **A03**/MF **A01**
Army War Coll. Strategic Studies Inst., Carlisle Barracks, PA.
The Shrinking Baton. Future Challenges to Leadership.
Military issues research memo.,
Anthony L. Wermuth. 29 Sep 78, 44p

Descriptors: *Leadership, Military commanders, Methodology, Political science, United States Government, Government(Foreign), Management, Military organizations, Forecasting.
Identifiers: Leadership style, Organization theory, Social change.

The context of organizational leadership is changing, as challenges emerge from widespread social change. Authoritarian styles are becoming less useful, while democratic styles increase in usefulness. With education and political maturity, groups become less responsive to Great Men, 'packaged leaders,' and assumptions of correct opinions. Pluralistic styles of leadership will be in demand, as groups with different interests proliferate. It will become more difficult to achieve success for leaders who have to fake concern about their followers' interests. (Author)

AD-A065 289/1GA PC **A07**/MF **A01**
Michigan Univ., Ann Arbor. Inst. for Social Research.
Organizational Diagnosis: Issues and Methods.
Final technical rept.,
Alan S. Davenport, and David G. Bowers. Feb 79, 147p
Contract N00014-77-C-0096

Descriptors: *Organizations, Diagnosis(General), Classification, Decision making, Methodology.

This report presents different approaches to data based organizational diagnosis (in particular, distance function, discriminant function, decision tree, and a Bayesian approach) and their effectiveness when applied to approximately 6,000 work groups. In particular, several different criteria are used to evaluate the classification techniques: proportion of correct classification, ability to reproduce the typology, a zero-one closeness measure, severity of misclassification, the information required to make classifications, the amount of data required to develop the procedure, and the ease of implementing the procedure. Discussion of these issues, and, as a consequence, suggestions for further investigation are included. (Author)

AD-A065 477/2GA PC **A08**/MF **A01**
Air Force Inst. of Tech., Wright-Patterson AFB, OH.
Consent and Obligation.
Master's thesis,
Thomas Wylie Stewart. Dec 78, 153p Rept no. AFIT-CI-79-101T

Descriptors: *Interpersonal relations, Agreements, Modification, Requirements, Philosophy, Social psychology, Political science, Value, Decision making, Volunteers, Theory, Theses.
Identifiers: *Consenting, *Obligations.

The main purpose of this study is to question the relation between consenting and being obligated. Topics covered include: An Idea of Consent and the Range of Obligation; Conditions of Consent -- Freedom, Information, Capacity, Conditions versus principles, Continued moral autonomy and Condi-

tions and consent given over time; Consent as the Source of Political Obligation -- A society of consenters, Military service, On Locke and Requirements beyond Consent; Consent and the Limits of Obligation -- Injustice and obligation, Civil disobedience and corporate authority, and Ultimate obligation; and Conflicts of Obligation -- Value and obligation to disobey, and Pluralism and other sources of disobedience.

AD-A065 489/7GA PC **A11**/MF **A01**
Air Force Inst. of Tech., Wright-Patterson AFB, OH.
The Cloze Test as a Procedure for Establishing Objective German Prose Readability Standards.
Doctoral thesis,
Brent M. Strong. 1978, 236p Rept no. AFIT-CI-79-100D

Descriptors: *Reading, German language, Comprehension, Standards, Classification, Test construction(Psychology), Indexes(Ratios), Statistical analysis, Algorithms, Foreign languages, *Learning, Selection, Scoring.
Identifiers: Difficulty, Cloze scores, Reading difficulty standards.

No abstract available.

ED-156 216 Not available NTIS
DISCOVER: A Computerized Careers Curriculum,
Jack R. Rayman. Jun 77, 10p
Paper presented at the Conference on Computers in Undergraduate Curricula, East Lansing, MI. June 20-22, 1977. For entire proceedings, see IR 006 142.
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$1.67, MF$0.83 Plus Postage.

Descriptors: Career education, College curriculum, *Computer assisted instruction, Educational innovation, Higher education, Information dissemination, Instructional design, Occupational guidance, Secondary education, Undergraduate students, *Vocational counseling.
Identifiers: Western Maryland College, Career development, Counseling.

Liberal arts campuses are feeling a need to provide better career education services for their undergraduate students. The DISCOVER Foundation has developed a comprehensive computerized career guidance system for grades 7 through 12 which not only provides career information, but also performs such tasks as teaching students decision-making skills and helping them to clarify their values. This system, which is being adapted for a college level computerized careers course, provides guidance through 12 50-minute modules of interactive content. Some tools and techniques developed by other guidance professionals, e.g., Holland's Self-Directed Search, have been incorporated in the System with permission, and provisions have been made to accommodate individual differences. Each of the DISCOVER system modules is described.

ED-157 498 Not available NTIS
Texas Woman's Univ., Denton.
The Role of the Elderly Adult in Recent Young Adult Fiction.
Master's thesis,
Janette Rutherford. May 78, 32p
Available from ERIC Document Reproduction Service, Arlington, VA. 22210, PC$2.06, MF$0.83 Plus Postage.

Descriptors: *Adolescent literature, Bibliographies, Book reviews, Fiction, *Interpersonal relationship, Masters theses, Older adults, Role perception, Self actualization.
Identifiers: *Elderly persons, *Youths.

Selected recent adolescent novels which center on a young adult's relationship with an older adult are analyzed. In these novels which feature older adults and young adults as main characters, the older character has qualities that the teenager examines, then accepts or rejects. In today's nuclear family, teenagers sometimes have very little opportunity to be well acquainted with older individuals. By depicting an elderly person's values and philosophies, these realistic novels can enhance a young adult's personal development and give him a new awareness, an interest or empathy for another human being.

N79-19682/0GA PC **A04**/MF **A01**
National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
Airline Pilot Scan Patterns During Simulated ILS Approaches.
A. A. Spady, Jr. Oct 78, 72p NASA-TP-1250, L-11989

Descriptors: *Aircraft pilots, Flight simulation, *Instrument landing systems, *Visual observation, Atmospheric turbulence, Instrument flight rules, Manual control, Oculometers, Ranking, Remote sensors.
Identifiers: Boeing 737 aircraft.

For abstract, see STAR 1710

PB-293 094/9GA PC **A03**/MF **A01**
Connecticut Univ., Storrs. World Education Project.
Applying Conceptual and Logical Analysis in Educational Studies. Multicultural Research Guides Series, Number Three.
Frank Andrews Stone. 1978, 31p

Descriptors: *Reasoning, *Education, Research, Philosophy, Concept formation, Analyzing, Cognition, Linguistics.
Identifiers: *Educational research, *Logical thinking, Educational philosophy, Logic, Inductive methods, Deductive methods, Scientific methodology.

The report describes typical thinking processes used by educational researchers. Much attention is given to the methods and devices of conceptual or linguistic analysis. Logical analysis which deals with issues of formal structure rather than substantive questions is also discussed in detail.

PB-293 103/8GA PC **A02**/MF **A01**
Utah Office of the Legislative Auditor General, Salt Lake City.
An Audit of the Need for Basic Science Certification in Utah.
Jun 78, 13p 78-11

Descriptors: *Achievement tests, *Utah, Licenses, Certification, Professional personnel, Legislation, Medical personnel.

The Basic Science Law (Utah Code, Title 58, Chapter 27) was passed by the Legislature in 1959. Under its provisions all applicants for a license to practice any of the healing arts must either pass an examination in the basic sciences or qualify for an exemption under the provisions of section 17 of the law. Applicants who pass the examination are awarded a certificate which they must submit with their application for professional licensure. The purpose of this audit is to provide the Legislature with information to evaluate whether applicants for licenses in the healing arts need to pass an examination in the basic sciences.

PB-293 306/7GA PC **A02**/MF **A01**
Civil Service Commission, Washington, DC. Personnel Research and Development Center.
The Measurement of Inductive Abilities According to the Schemata of Inductive Logic.
Technical study,
Magda Munoz-Colberg, and Mary Anne Nester. Oct 78, 20p TS-78/2

Descriptors: *Test construction(Psychology), *Abilities, Personnel selection, Reasoning, Aptitudes, Predictions, Judgment.

The logic of induction is described in its two stages: law-generative judgments and judgments of probability. The latter have been neglected in the psychometric approach to induction, which has mainly been limited to nonlinguistic law-generative questions. In order to correct this deficiency, thirty multiple choice items based on schemata for judgments of probability were written in the linguistic medium and administered to adult job applicants in three different tests. Statistical characteristics of the tests (means and reliabilities) and items (p-values and item-test point-biserial correlations) were very satisfactory when compared to operational subtests. Test correlations with inductive (law-generative nonlinguistic) and deductive subtests were substantial and higher with the deductive subtest. It is argued that the new test improves the predictive value sought in measurement because judgments of probability and reasoning from linguistic data prevail in every situation for which the instrument is intended to select.

PB-293 314/1GA PC **A02**/MF **A01**
Civil Service Commission, Washington, DC. Personnel Research and Development Center.
A Logic-Based Approach to the Measurement of Deductive Abilities in Deaf and Hearing Persons,
Magda Munoz-Colberg, and Mary Anne Nester. Oct 78, 18p TS-78-3

Descriptors: *Handicapped persons, *Achievement tests, Abilities, Auditory defects, Test development(Psychology), Personnel selection.
Identifiers: Deaf persons.

The logic of deduction is outlined as background for the objectives fulfilled in this project: (1) development of an instrument to measure deductive abilities in the form of conditional and alternative schemata, which have been generally neglected by psychometricians; (2) development of syllogistic tests traditionally used in psychometrics (categorical syllogisms) according to the logic of propositional equivalence and propositional relations; and (3) determination of which form of syllogistic test, symbolic or linguistic, would be appropriate to measure deductive abilities in deaf persons. Four tests were constructed and administered to deaf and hearing adults. The psychometric properties of the logically-constructed (test means, reliabilities, and item analysis results) were highly desirable. Deaf persons performed as well as the hearing on the symbolic test but less well on the linguistic test. The performance of hearing persons is discussed relative to the logical design and linguistic medium of the questions.

PB-293 389/3GA PC **A16**/MF **A01**
Transportation Systems Center, Cambridge, MA.
Effects of the Ride Environment on Passenger Activities: A Field Study on Intercity Trains.
Final rept. Oct 76-Sep 78,
Anna M. Wichansky. Jan 79, 351p DOT-TSC-RSPA-79-1

Descriptors: *Passenger transportation, *Railroad trains, *Travel, Activity, Relationships, Behavior, Satisfaction, Environments, Performance(Human), Vibration, Noise(Sound), Humidity, Illuminance, Responses, Experimental data, Assessments, Quality, Surveys.
Identifiers: Northeast Region(United States), *Amtrak system.

A three-part field study of passenger activities (e.g. reading, writing, talking, sleeping) was conducted on intercity Amtrak trains in the northeastern United States to determine the relationships between the ride environment, subjective passenger comfort and satisfaction, and overt passenger behavior. From observations of 7000 revenue passengers over a one-year period, a stable relative frequency distribution of 12 categories of passenger activity in three effort classes was established. Reading and viewing were observed most often; handcrafts and games were seldom observed. An Amtrak survey of ride quality and activity preferences was also conducted using over 800 revenue Northeast Corridor passengers. Although passengers rated the ride as comfortable, ride motions were perceived to interfere with performance of visual/motor tasks (e.g., Reading and Writing). Passengers' preferences for activities were also found to increase with trip distance. In order to quantify ride quality/activity relationships, observations of passenger activity were made simultaneously with measurements of vibration in six degrees of freedom, acoustic noise, temperature, relative humidity, and illumination aboard 77 Amtrak vehicles. Correlational analysis revealed that rotational (rather than linear) motions were associated with low frequencies of motor and conversational activity and high levels of rest behavior. Activity levels also varied with vehicle type and time of day. Multiple regression techniques were used to develop linear equations of physical ride quality and trip variables which account for 20% of the variance in

the relative frequencies of various types of activities.

PB-293 816/5GA PC **A13**/MF **A01**
RAND Corp., Santa Monica, CA.
Product Decision Processes Among Older Adults,
Tora Kay Bikson, and Jacqueline D. Goodchilds.
Sep 78, 294p R-2361-NSF, NSF/RA-780456
Grant NSF-APR75-20134

Descriptors: *Consumer affairs, *Elderly persons, *Decision making, Selection, Purchasing, Surveys, Comparison, Information processing(Psychology).
Identifiers: Consumer products, Product information.

The goal of the study was to explore and assess consumer information processing problems from the perspective of elderly consumers in order to optimize product choices. Specifically, the investigation attempted to determine how older consumers, as compared to younger consumers, (1) perceive and categorize products, (2) select, weigh, and intergrate diverse bits of product information, (3) arrive at decisions of varying optimality, and (4) subjectively react to making product choices. It also explored the influence of such variables as sex, education level, shopping practices, and household status on product choice. These research objectives were pursued in a comparison-group study of older and younger consumers in a controlled product choice situation.

5K. Sociology

NTIS/PS-79/0450/1GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Population Mobility (A Bibliography with Abstracts).
Rept. for 1964-Apr 79,
Carolyn Shonyo. May 79, 258p*
Supersedes NTIS/PS-78/0382, NTIS/PS-77/0345, NTIS/PS-76/0261, and NTIS/PS-75/323.

Descriptors: *Bibliographies, *Population migrations, Populations, Demography, Census, Mobility, Regional planning, Urban planning, Abstracts, Residential buildings, Employment.
Identifiers: Regional population.

Research reports are cited concerning population migrations; census statistics on populations; the effects of housing, employment, and services availability on population movements; and population mobility between urban and rural areas. (This updated bibliography contains 252 abstracts, 26 of which are new entries to the previous edition.)

PB-293 182/2GA PC **A13**/MF **A01**
Wisconsin Univ.-Madison.
Parameters of Racial Discrimination in the Late 1960's.
Final rept.,
Thomas N. Daymont. Feb 79, 288p DLMA-91-55-77-25-1
Grants DL-91-55-77-25, PHS-NIMH-06275
Sponsored in part by Grant PHS-HD-5876. Prepared in cooperation with Ohio State Univ., Columbus. Center for Human Resource Research.

Descriptors: *Discrimination, *Negroes, Employment, Industrial relations, Labor relations, Labor unions, Unionization, Socioeconomic status, Mathematical models, Males.
Identifiers: Racial discrimination, Jobs.

This study investigates racial discrimination in the labor market among men during the late 1960s. Linear and log-linear models were used to calculate indicators of discrimination between 1965 and 1970. These indicators were then used to investigate the relationship between discrimination and selected individual characteristics and the social organization of labor markets across industries. Our results indicate that during the late 1960s, blacks were less likely than equivalent whites to obtain the more rewarding jobs. Net of a pure rewards dimension, blacks were less likely than whites to obtain jobs (1) which had direct, nonsubordinate contact with customers (e.g., sales jobs); (2) in which white workers were successful in establishing a substantial degree of monopoly power in the labor market without uniting with blacks (e.g., craft jobs); (3) for which access was determined more by capital markets than by labor markets (e.g., self-employed jobs); and (4) which tended to be in the private-profit sector rather than the nonprofit or public sectors.

PB-293 222/6GA PC **A06**/MF **A01**
California Dept. of Finance, Sacramento. Program Evaluation Unit.
Management Review of Title XX County Administered Social Services.
Staff reference rept.
Jun 78, 103p S78-14

Descriptors: *Social services, *California, Local government, State government, Counties, Supervision, Project management, Legislation, Problem solving, Objectives, Children.

This study examines State supervision of county administered social services which are funded by Title XX of the Social Security Act and State and/or county matching funds. Social services provide noncash assistance through a variety of services administered by the State and counties; at the local level, the services are usually provided by county social workers. In recent years, the State contribution to the social services program has increased substantially. During the same period, a number of studies have indicated problems in State supervision of social services, and questions have arisen as to whether the services delivered are effective in reducing need. These factors led Department of Finance budget staff to request a management review of social services.

PB-293 243/2GA PC **A06**/MF **A01**
Indiana State Commission for the Handicapped, Indianapolis.
Governor's Conference on the Handicapped (13th): Attitudes - The Real Handicap, Held at Indianapolis, Indiana on October 10 and 11, 1974.
Oct 74, 103p

Descriptors: *Handicapped persons, *Meetings, *Attitudes, Rehabilitation, Barriers, Legislation, Services.
Identifiers: *Disabled persons.

Central to any rehabilitation effort are attitudes: the attitudes of the handicapped individual, the attitudes of those who seek to render service to the handicapped, the attitudes of the handicapped person's family, friends and co-workers, and the attitudes of the public at large toward the handicapped and to their efforts in seeking normalization of their life. However promising any rehabilitation program may appear on the surface, however well it may be financed, however well it may be staffed, however well advanced may be the rehabilitative techniques provided by science, still can that program be blunted -- if a positive and understanding attitudinal climate has not been established.

PB-293 250/7GA PC **A02**/MF **A01**
Nebraska Univ., Lincoln. Bureau of Business Research.
A Review of Population Estimates and Projections for Nebraska Cities.
Nebraska economic and business rept.,
Vicki S. Stepp. Apr 78, 25p NEBR-21
Prepared for Nebraska State Office of Planning and Programming, Lincoln. Sponsored in part by Old West Regional Commission, Washington, DC.

Descriptors: *Census, *Populations, *Estimates, *Urban areas, Projection, Population growth, Nebraska.

The most rapidly growing cities in Nebraska since 1970 have been those of 2,500 to 5,000, according to 1976 estimates by the U.S. Bureau of the Census. The 10.4 percent growth rate of that city size group was more than double the growth rates for larger size classes of cities, for rural Nebraska, and for the state as a whole. Population growth in rural Nebraska (outside cities of 2,500 and over) surpassed the state growth rate as well as that of urban Nebraska from 1970 to 1976. This is in contrast to the decline in rural population that was projected based on past trends. 1976 estimates for Nebraska cities tend to be below the population levels that had been projected to occur based on past trends. Of the state's 47 cities of 2,500 and above, 36 are estimated to be growing more slowly than had been projected to occur. Special censuses and institutional population changes explain most of the cases where 1976 city population estimates differ greatly from what had been projected to occur.

PB-293 421/4GA PC **A04**/MF **A01**
Lake Champlain Basin Study, Burlington, VT.
The Economic Value of Water-Oriented Outdoor Recreation on Lake Champlain.
Final rept.,
A. H. Gilbert, and Larry Winant. Dec 77, 53p LCBS-04
Prepared by Vermont Univ., Burlington. Report on Lake Champlain Basin Study.

Descriptors: *Economic analysis, *Recreation, *Lake Champlain, Expenses, Income, Marinas, Employment, Swimming, Fishing, Prices, Citizen participation, Tables(Data), New York, Vermont.
Identifiers: *Water based recreation, Boating, Camping, Hunting.

The objectives of this report were to estimate the dollar volume expenditures generated by five major outdoor recreation activities, through the evaluation of expenditure patterns among participants, and the gross income of the marina industry on and along the shores of Lake Champlain. The five major recreational activities are: boating, waterfowl hunting, fishing, camping, and swimming. The marinas were interpreted as being a separate industry. Such information as size and location, period of operation, berthing capacity, marina employment, and estimated value was examined. The information included under the recreational activities includes participation characteristics, expenditure characteristics, and estimated value.

PB-293 444/6GA PC **A05**/MF **A01**
Lake Champlain Basin Study, Burlington, VT.
Critical Environmental Areas.
Technical rept.,
Peter R. Brooks. Jan 79, 77p LCBS-28
Prepared by Adirondack Park Agency, Ray Brook, NY. Report on Lake Champlain Basin Study.

Descriptors: *Shores, *Recreation, *Lake Champlain Basin, Statutes, Inventories, Sites, Management, Protection, Rivers, Aquatic animals, Wildlife, Fishes, Deer, Geology, History, Archaeology, Conservation, New York, Vermont.
Identifiers: Endangered species, *Habitats.

This study has focused on those critical environmental shoreland areas adjacent to Lake Champlain which have potential for water-oriented outdoor recreation. These resources were divided into three categories: water-related areas, land-related areas and specific areas. With the increase in recreational planning, federal, state and municipal governments need basin inventory data from which to develop management strategies. This report provides such information. Under the water-related category, critical areas discussed include waterfowl nesting (resting and/or feeding) sites; state fish stocking waters and natural game fish breeding waters; and wild, scenic, or recreational river corridors. Land-related areas include unique, rare or endangered species, bog species and deer wintering yards. Site specific areas included significant geologic sites and significant historic sites.

PB-293 511/2GA PC **A08**/MF **A01**
Nebraska Univ. at Omaha. Center for Applied Urban Research.
Juvenile Justice Program Collaboration (Nebraska).Evaluation Report.
Genevieve Burch. May 78, 174p
See also PB-293 512. Sponsored in part by Law Enforcement Assistance Administration, Washington, DC.

Descriptors: *Criminal justice, *Youths, Juvenile delinquency, National government, Local government, Cooperation, Attitudes.
Identifiers: *Juvenile status offenders, Deinstitutionalization.

The report describes and evaluates an experimental program for deinstitutionalization of juveniles adjudicated as delinquent for acts which are of-

fenses because they were committed by minors, but would not be crimes if committed by adults. The program involved government organizations at the national level and volunteer agencies at the local level.

PB-293 512/0GA PC **A08**/MF **A01**
Nebraska Univ. at Omaha. Center for Applied Urban Research.
Juvenile Justice Program Collaboration (Nebraska). Volume II: Auxiliary Appendixes.
Genevieve Burch. May 78, 161p
See also PB-293 511. Sponsored in part by Law Enforcement Assistance Administration, Washington, DC.

Descriptors: *Criminal justice, *Youths, Juvenile delinquency, National government, Local government, Cooperation, Attitudes.
Identifiers: *Juvenile status offenders, Deinstitutionalization.

The report contains documented auxiliary data to the first volume on the deinstitutionalization of juvenile status offenders.

PB-293 554/2GA PC **A09**/MF **A01**
Connecticut Dept. of Environmental Protection, Hartford. Coastal Area Management Program.
Recreational Demand, Opportunities, and Limitations in Connecticut's Coastal Area,
Margaret N. Schneider. Mar 78, 187p
PLANNING-25
Sponsored in part by National Oceanic and Atmospheric Administration, Washington, DC. Office of Coastal Zone Management.

Descriptors: *Recreation, *Coastal zone management, *Connecticut, Assessments, Demand(Economics), Land acquisition, Marinas, Conflicts, Industries, Islands(Landforms), Beaches, Shores, Land use, Public land, Government policies, Legislation, Parks.
Identifiers: Water based recreation, Ownership.

This report assesses recreational demand, opportunities and limitations in Connecticut's coastal area and recommends a planning process for the protection of and access to Connecticut's shorefront area.

PB-293 555/9GA PC **A05**/MF **A01**
West Virginia Div. of Vocational Rehabilitation, Charleston.
Project for Serving Severely Disabled Spinal Cord Injured Persons.
Final rept. 1 Jul 75-30 Jun 78,
William R. Phelps. 1 Sep 78, 100p
Grant SRS-25-15501

Descriptors: *Rehabilitation, *Handicapped persons, Injuries, Spinal cord, Paraplegia, Employment, Vocational guidance, Counseling, Education, Family relations, West Virginia, Requirements, Transportation, Housing planning.
Identifiers: Disabled persons, Vocational rehabilitation.

The three-year Innovation and Expansion Project involved the West Virginia Division of Vocational Rehabilitation, the WV. University Medical Center, and the West Virginia Rehabilitation Center. The population included the severely disabled spinal cord injured from three target counties of West Virginia, including Harrison, Marion and Monongalia. New knowledge was gained in the following problem areas: housing needs, transportation needs, psychological concerns, family education, attendant care needs, consumer involvement, job placement efforts, and intensified Vocational Rehabilitation counseling services.

PB-293 845/4GA PC **A04**/MF **A01**
Volunteers for International Technical Assistance, Inc., Schenectady, NY.
Manuel Pratique de l'Equipment Rural (V): Amenagement du Foyer (Village Technology Handbook: Home Improvement and Communications).
Jun 63, 74p
Text in French. See also PB-286 464. Sponsored in part by Agency for International Development, Washington, DC. and Department of Commerce, Washington, DC.

Descriptors: *Houses, Improvement, Stoves, Ovens, Furniture, Bedding equipment, Sewing machines, Pottery, Developing countries, Technical assistance.
Identifiers: Developing country application, Self help, Villages.

This is the fifth of five books teaching methods to improve one's standard of living through self-help methods. This volume deals with home improvement (includes kitchen stoves, outside ovens, how to make soap at home, low cost stackable beds, locally made mattresses, potter's wheel sewing machine drives, small kilns, and salt glazes for pottery) and communications (includes inexpensive rubber cement, flashlight slide projectors, gelatin duplicators, paper stencils, and silk screen paint). Tables of metric and English measure conversions are included.

6. BIOLOGICAL AND MEDICAL SCIENCES

6A. Biochemistry

AD-A064 957/4GA PC **A03**/MF **A01**
California Univ., Irvine.
Comparative Biochemistry and Metabolism.
Annual rept. 1 Jun 77-31 May 78,
Ronald C. Shank. Dec 78, 34p AMRL-TR-78-89
Contract F33615-76-C-5005

Descriptors: *Hydrazine, *Methyl hydrazines, *Dimethyl hydrazine (1-1), Biochemistry, Metabolism, Carbon dioxide, Deoxyribonucleic acids, Mice, Rats, Liver, Kidneys.

Co-administration of an LDO.01 dose of hydrazine with 14C-methylmethionine to rats or mice results in the methylation at the 7-position of guanine in liver DNA; in the mouse, but not in the rat, methylation at the O6 -position of guanine in liver DNA also occurs. Methylation of liver DNA in only the 7-position of guanine occurs in rats and mice treated with MMH and to a much lesser extent with UDMH. Carbon dioxide production from MMH and UDMH is most active in rat liver, less active in kidney and colon and only slightly active in lung; carbon dioxide production from MMH is 1.4 to 5.5 times greater than for UDMH. (Author)

AD-A065 230/5GA PC **A02**/MF **A01**
Naval Medical Research Inst., Bethesda, MD.
Phosphoribulokinase from 'Nitrobacter winogradskyi': Activation by Reduced Nicotinamide Adenine Dinucleotide and Inhibition by Pyridoxal Phosphate.
Medical research progress rept.,
Lutz A. Kiesow, Benjamin F. Lindsley, and Juergen W. Bless. 3 Nov 76, 8p
Availability: Pub. in Jnl. of Bacteriology, v130 n1 p20-25 Apr 77.

Descriptors: *Enzymes, Vitamin B complex, Carbon dioxide, Nucleotides, Adenine, Activation, Reprints.
Identifiers: *Nitrobacter winogradskyi, Phosphoribulokinase, Nicotinamide, Fixation, Bacteria.

No abstract available.

AD-A065 249/5GA PC **A02**/MF **A01**
Naval Medical Research Inst., Bethesda, MD.
Improved Assay for Monocyte Chemotaxis Using Frozen Stored Responder Cells.
Medical research progress rept.,
David A. Dean, and Douglas M. Strong. 30 Jun 76, 9p
Availability: Pub. in Jnl. of Immunological Methods, v14 p65-72 1977.

Descriptors: *Monocytes, *Chemotaxis, Humans, Cells(Biology), Freezing, Sensitivity, Reprints.

No abstract available.

AD-A065 338/6GA PC **A02**/MF **A01**
North Carolina Univ. at Chapel Hill. Dept. of Chemistry.
Environmental Effects on Photochemical Reactions: Contrasts in the Photooxidation Behavior of Protoporphyrin IX in Solution, Monolayer Films, Organized Monolayer Assemblies, and Micelles,
Barbara E. Horsey, and David G. Whitten. 3 Oct 77, 4p ARO-14502.1-C
Grant DAAG29-77-G-0063
Availability: Pub. in Jnl. of the American Chemical Society, v100 n4 p1293-1295, 15 Feb 78.

Descriptors: *Porphyrins, *Photochemical reactions, Oxidation reduction reactions, Solutions(Mixtures), Membranes(Biology), Reprints.
Identifiers: Environmental effects.

No abstract available.

AD-A065 347/7GA PC **A02**/MF **A01**
Naval Medical Research Inst., Bethesda, MD.
Analytical Precautions in Measurement of Blood Cyanide.
Medical research progress rept.,
F. Lee Rodkey, and Robert F. Robertson. 29 Aug 78, 5p Rept no. NMRI-78-83
Availability: Pub. in Clinical Chemistry, v24 n12 p2184-2185 1978.

Descriptors: *Blood analysis, *Cyanides, Chemical analysis, Measurement, Contamination, Reprints.
Identifiers: Silver titration.

No abstract available.

AD-A065 379/0GA PC **A02**/MF **A01**
Duke Univ., Durham, NC. Paul M. Gross Chemical Lab.
The Formation of Cyclic Peroxides from Unsaturated Hydroperoxides: Models for Prostaglandin Biosynthesis 1, 2,
Ned A. Porter, Max O. Funk, Dennis Gilmore, Ramdas Isaac, and John Nixon. 1 Mar 76, 7p ARO-12782.1-C
Grant DAHC04-75-G-0117
Availability: Pub. in Jnl. of the American Chemical Society, v98 n19 p6000-6005, 15 Sep 76.

Descriptors: *Peroxides, *Hydroperoxides, Cyclic compounds, Prostaglandin, Biosynthesis, Free radicals, Reprints.
Identifiers: Models.

No abstract available.

AD-A065 383/2GA PC **A02**/MF **A01**
Naval Medical Research Inst., Bethesda, MD.
Palmitate (14C) Uptake in Isolated Rat Liver Mitochondria: Effects of Fasting, Diabetes Mellitus, and Inhibitors of Carnitine Acyltransferase.
Medical research progress rept.,
John M. Amatruda, Dean H. Lockwood, Simeon Margolis, and Lutz A. Kiesow. 29 Jul 77, 10p
Rept no. NMRI-78-89
Availability: Pub. in Jnl. of Lipid Research, v19 n6 p688-694 Aug 78.

Descriptors: *Mitochondria, *Transferases, Diabetes, Food deprivation, Liver, Biological absorption, Rats, Reprints.
Identifiers: *Palmitate, *Carnitine.

No abstract available.

AD-A065 395/6GA PC **A02**/MF **A01**
Army Medical Research Inst. of Infectious Diseases, Frederick, MD.
Biological Activities of the Peptides of Staphylococcal Enterotoxin C Formed by Limited Tryptic Hydrolysis,
Leonard Spero, and Beverly A. Morlock. 19 May 78, 5p
Availability: Pub. in Jnl. of Biological Chemistry, v253 n24 p8787-8791, 19 May 78.

Descriptors: *Peptides, *Enterotoxins, *Staphylococcus, Polymers, Bacterial toxins, Trypsin, Antibodies, Reprints.
Identifiers: Bacteria.

No abstract available.

6B. Bioengineering

AD-A065 146/3GA PC **A02**/MF **A01**
California Univ., San Diego, La Jolla.
An International Congress on Biorheology Held at University of California, San Diego on August 28 - September 1, 1978.
Final technical rept. 1 Feb 78-28 Feb 79,
Yuan-Cheng Fung. 30 Jan 79, 10p Rept no. TR-1
Grant N00014-78-G-0018

Descriptors: *Biomechanics, Reports, Symposia.
Identifiers: *Biorheology.

The purpose of the Congress is to assemble the world's active research workers in the field of biorheology to discuss the most recent advances in this science. In recent years, there is a rapid increase in the number of people working in the field of biomechanics, which has applications to many areas of physiology, medicine, surgery and bioengineering in general. Biorheology occupies a central position in biomechanics, because all biomechanical analysis require information on the rheological properties of the materials involved. For this Congress, a total of 205 papers were presented in 27 sessions. The total number of authors was 350. A total of 308 participants attended the meeting.

N79-19677/0GA PC **A02**/MF **A01**
General Electric Co., Houston, TX. Space Div.
Regional Program for Acquisition of Medical Experiments.
Final Report.
P. C. Vannordstrand. 31 Oct 78, 18p NASA-CR-160121, TIR740-RP-7006
Contract NAS9-15462

Descriptors: *Biomedical data, *Data acquisition, *Medical science, *Regional planning, *Technology transfer, Aerospace medicine, Conferences, Information flow, Nasa programs, Project management, Project planning.

For abstract, see STAR 1710

6C. Biology

AD-A065 274/3GA PC **A02**/MF **A01**
Naval Medical Research Inst., Bethesda, MD.
'Schistosoma mansoni': Extraction and Partial Characterization of Membrane Antigens Using an Assay Based on Competitive Inhibition of Human Antibodies Binding to Schistosomules.
Medical Research Progress rept.,
K. D. Murrell, W. E. Vannier, P. Minard, and V. D. Schinski. 9 Jul 78, 20p
Availability: Pub. in Experimental Parasitology, v41 p446-463 1977.

Descriptors: *Schistosoma mansoni, Antigens, Clinical medicine, Hosts(Biology), Reprints.
Identifiers: Worms, Trematoda.

No abstract available.

AD-A065 330/3GA PC **A02**/MF **A01**
Army Research Inst. of Environmental Medicine, Natick, MA.
An In Vitro System for Studying Freeze Thaw Damage to Endothelial Cells in Monolayer Culture.
Final rept.,
Lynn R. Trusal, Carol J. Baker, and A. Guzman. 2 Jan 79, 25p Rept no. USARIEM-M-4/79

Descriptors: *Freezing, *Thawing, Endothelium, Cells(Biology), In vitro analysis, Damage.

The study of freeze-thaw damage to endothelial cells necessitated the development of a suitable in vitro system. After investigating various substrates, Leighton tubes containing a plastic coverslip proved to be the most versatile for studying in vitro alteration to endothelial cells following thaw. The polymethlpentene coverslip is the key to its versatility. It may also be easily cut to allow portions of the same monolayer to be processed for examination by phase contrast, bright field, and both scanning and transmission electron microscopy. At the same time, the attached handle allows for easy processing without distrubing the monolayer. Endothelial cells also remain better attached to the plastic substrate than to glass coverslips following a freeze-thaw insult. The Leighton tube itself is ideal for temperature studies because it is water tight, allowing submersion in refrigerated water baths, and the media covering the cells may be assayed for cellular enzymes and ions released into the media following thaw. In this manner, biochemical markers may be correlated with the same cells used for all forms of microscopy. (Author)

AD-A065 351/9GA PC **A02**/MF **A01**
Naval Medical Research Inst., Bethesda, MD.
B Lymphocyte Development, Heterogeneity, and Function.
Medical research progress rept.,
W. E. Paul, I. Scher, J. J. Mond, A. A. Ahmed, and B. Subbarao. 1978, 9p Rept no. NMRI-78-87
Availability: Pub. in Arthritis and Rheumatism, v21 n5 Supplement pS175-S179 Jun 78.

Descriptors: *Lymphocytes, *Heterogeneity, Cells(Biology), Mice, Strains(Biology), Reprints.

No abstract available.

AD-A065 448/3GA PC **A02**/MF **A01**
Federal Aviation Administration, Washington, DC. Office of Aviation Medicine.
Sex and Race Determination of Crania by Callpers and Computer: A Test of the Giles and Elliot Discriminant Functions in 52 Forensic Cases.
Clyde C. Snow, Steve Hartman, Eugene Giles, and Fontaine A. Young. Jan 79, 19p Rept no. FAA-AM-79-2

Descriptors: *Discriminate analysis, *Anthropology, Race(Anthropology), Test methods, Skeleton, Sex, Computer aided instruction, Minicomputers.

The Giles and Elliot discriminant functions diagnosing sex and race from cranial measurements were tested on a series of forensically examined crania of known sex and race. Of 52 crania of known sex, 46 (88%) were correctly diagnosed. Racial diagnoses were correct in 30 (71%) of 42 crania of known race. Analysis of the facial data indicates that most of the errors resulted from the misclassification of American Indian crania as White or Negro. This suggests that the temporally remote and geographically limited prehistoric Indian crania used in developing the functions do not provide a data base representative of the present-day U.S. American Indian population. Cranial size, age at death, and certain pathological conditions altering cranial form can also contribute to misdiagnoses of sex and /or race by the function. We conclude, that despite some shortcomings, the Giles and Elliot discriminant functions provide a useful tool in forensic anthropology. (Author)

NTIS/PS-79/0406/3GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Fisheries Law. Volume 2. April, 1976-April, 1979 (A Bibliography with Abstracts).
Rept. for Apr 76-79,
Robena J. Brown. May 79, 158p*
Supersedes NTIS/PS-78/0394, NTIS/PS-77/0324, NTIS/PS-76/0260, and NTIS/PS-75/111. See also Volume 1, 1974-March, 1976, NTIS/PS-77/0323.

Descriptors: *Fisheries, *Bibliographies, *International law, *Marine resources, Fishing grounds, Territorial seas, Law(Jurisprudence), Marine fishes, Shellfish, Coasts, Mineral deposits, Oil recovery, Marine terminals, Insurance, Claims, Seals(Mammals), Water pollution, International relations.

National and international laws on fisheries, fishing grounds, pollution of fisheries, and endangered species are cited. The legal aspects of the construction of artificial reefs; impacts of fishing, both for sport and commerce; and regulations involving marine fishes and shell fish are included. (This updated bibliography contains 150 abstracts, 21 of which are new entries to the previous edition.)

PATENT-4 132 226
Not available NTIS
Department of the Navy Washington DC
Biopotential Movement Artifact Inhibiting System.
Patent,
Robert L. Seeley, and William F. Flanigan. Filed 13 Jul 77, patented 2 Jan 79, 8p AD-D005 806/5, PAT-APPL-815 327
Supersedes PAT-APPL-815 327-77, AD-D005 724.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $0.50.

Descriptors: *Patents, *Test equipment, *Auditory signals, Thresholds(Physiology), Aquatic animals, Cetacea, Detectors.
Identifiers: PAT-CL-128/2.1, Evoked responses, Marine mammals, Bioinstrumentation.

The broadband auditory thresholds of marine mammals are determined by an apparatus which compensates for the animals' movement artifact. A number of evoked responses to audio stimuli are average during discrete time intervals. This approach reduces the effects of potentials attributed to movements of the animal, for example, the opening and closing of the blow hole. A threshold detector circuit, a tape delay and related circuitry electronically cooperate to block potentials attributed to the movement artifact when the potentials exceed the likely magnitude of the evoked response. Optionally, an oscilloscope is used to provide a visual representation of the evoked response and the potentials are manually inhibited when the movement artifact masks or otherwise overrides the evoked response. (Author)

PB-294 882/6GA PC **A04**/MF **A01**
South Carolina Wildlife and Marine Resources Dept., Charleston. Marine Resources Center.
Management and Development of the Shellfish Industry in South Carolina,
Robert C. Gracy, Willis J. Keith, and Raymond J. Rhodes. Mar 78, 68p TR-28, NOAA-79011104

Descriptors: *Industries, *Shellfish, *South Carolina, Management, Sampling, Production, Oysters, Clams, Market value, Harvesting, Seeds, Wando River, Leasing, Estuaries, Santee River, Equipment, Income, Statistical data.
Identifiers: Fishing equipment.

The major objective of a three year project was to effectively increase South Carolina molluscan (shellfish) production through proper management, development and utilization of these renewable resources. Harvesting intertidal oysters is currently the dominant practice within the industry. Lack of mechanization continues to ensure low productivity. State managed oyster bottoms have been established in several areas, providing an additional source of intertidal seed for planting. The substantial seed beds of the Santee and Wando Rivers have been resurveyed to provide a basis for formulating a management program to promote commercial use of these seed oysters. From March 1973 until June 1975, a hard clam survey was conducted on the unleased subtidal bottoms of the State. Substantially more clams were harvested in 1975 than in any previously recorded clam season.

6D. Bionics

AD-A065 502/7GA PC **A02**/MF **A01**
Stanford Univ., CA. Dept. of Computer Science.
On the Model Theory of Knowledge.
Technical rept.,
John McCarthy, Masahiko Sato, Takeshi Hayashi, and Shigeru Igarashi. Apr 78, 13p Rept nos. STAN-CS-78-657, AIM-312
Contract MDA903-76-C-0206, ARPA Order-2494

Descriptors: *Semantics, *Artificial intelligence, Model theory.
Identifiers: Epistemology, Mathematical logic, Axioms, Inference, Kripka semantics, Problem solving, Theorems.

Another language for expressing 'knowing that' is given together with axioms and rules of inference and a Kripke type semantics. The formalism is extended to time-dependent knowledge. Completeness and decidability theorems are given. The

problem of the wise men with spots on their foreheads and the problem of the unfaithful wives are expressed in the formalism and solved. (Author)

6E. Clinical Medicine

AD-A064 868/3GA PC **A06**/MF **A01**
School of Aerospace Medicine, Brooks AFB, TX.
Transmission and Absorption Coefficients for Ocular Media of the Rhesus Monkey.
Final rept. 15 Sep 74-15 Sep 76,
Edward F. Maher. Dec 78, 104p Rept no. SAM-TR-78-32

Descriptors: *Absorption coefficients, Eye, Transmitting, Spectral emittance, Tissues(Biology), Measurement, Thickness, Statistical analysis, Rhesus monkeys.
Identifiers: *Ocular media, Laboratory animals.

Tissue transmissivity and absorption coefficients were calculated for components of the refractive media, distilled water, and physiological saline throughout the wavelength interval of 0.2-15 micrometer. All transmission measurements required for these calculations were performed spectrophotometrically using freshly enucleated rhesus monkey eyes and narrow-bandwidth radiation. Much of the absorption coefficient data presented is from wavelength regions where values have not been previously reported. (Author)

AD-A064 885/7GA PC **A02**/MF **A01**
Office of Naval Research, London (England).
Progress in Cardiology.
Conference rept.,
J. C. LaRoque. 29 Dec 78, 14p Rept no. ONRL-C-12-78
Proceedings of a conference held in Nice (France) 15-19 May 78.

Descriptors: *Cardiology, *Cardiovascular diseases, Coronary disease, Coronary arteries, Cardiologists, Heart, Electrophysiology, Myocardial infarction.

An international conference of cardiologists gathered to present data and discuss the present status of thinking in four major areas of cardiology. In valvular heart disease, there are numerous problems related to presence of a valve in the body. Mortality curves are highly favorable, however, when compared with the natural history of unoperated valve disease. Porcine heterografts are the wave of the future. The echocardiogram has substantially advanced diagnosis in the area, but it has many limitations which are still being discovered. Congenital heart disease patients are in many cases surviving into adult ages, presenting numerous new problems in management. Though anatomy may be corrected, physiology is not completely corrected.

AD-A064 888/1GA PC **A02**/MF **A01**
Naval Dental Research Inst., Great Lakes, IL.
Venery and Vincent's. 15 Case Reports and Discussion.
M. R. Wirthlin, and L. Devine. 1978, 12p Rept no. NDRI-PR-78-02
Availability: Pub. in Jnl. of Periodontology, v49 n9 p449-456 Sep 78.

Descriptors: *Gingivitis, Patients, Case studies, Naval personnel, Great Lakes, Males, Reprints.

No abstract available.

AD-A064 964/0GA PC **A02**/MF **A01**
Boston Univ., MA. School of Medicine.
Myocardial Effects of Shock.
Final rept. 1970-1973,
Lester Williams, Jr. Jul 73, 6p
Contract DADA17-70-C-0074

Descriptors: *Shock(Pathology), Ischemia, Intestines.
Identifiers: *Cardiovascular system.

Background material for the original proposal indicated that one of the pathogenic considerations in shock was a specific humoral factor responsible for myocardial depression. This myocardial depression factor (MDH) was found to originate in ischemic gut; consequently the project focused upon the relative relationship between ischemic intestine and myocardial depressant activity. Because of difficulty in quantitating the degree of intestinal ischemia, its physiological significance and the production of the systemic effect, a series of studies were conducted. These documented: (a) significant impairment in bidirectional flow of fluid and electrolyte abnormalities in the presence of intestinal ischemia; (b) although autoregulation and autoregulatory escape could be well documented even in conditions of low pressure and after drug manipulation, these normal physiologic phenomena did not appear to be maintained when intestinal ischemia was extensive; (c) by the use of the tetrazolium assay for describing the degree of disruption and monitoring of mucosal and serosal pH, one could predict the degree of intestinal ischemia that had been induced by interruption of the blood supply and thus potentially the viability of the bowel.

AD-A064 968/1GA PC **A02**/MF **A01**
Harvard Medical School, Boston, MA. Dept. of Surgery.
A Program for Clinical Care in Physical Trauma.
Annual summary rept. no. 1, 1 Feb 77-31 Jan 78,
Francis D. Moore, and Nicholas E. O'Connor. 17 Feb 79, 11p
Contract DADA17-73-C-3022
See also Annual summary rept. no. 1 dated 31 Jan 77, AD-A055 358.

Descriptors: *Medical research, *Amino acids, *Clinical medicine, Glucose, Glycine, Carbon monoxide poisoning, Patients.

Studies were performed which showed that amino acid infusions alone did not eliminate negative nitrogen balance and that addition of glycerol, low dose glucose, fat emulsion and high dose glucose were effective in further reducing nitrogen loss with high dose glucose and amino acids being the most effective. Using N15 enriched glycine the addition of glucose was shown to increase the rate of protein synthesis over amino acid infusions alone.

AD-A065 069/7GA PC **A02**/MF **A01**
Institute for Medical Research, Kuala Lumpur (Malaysia).
'Rickettsia tsutsugamushi' Infections in Chiggers and Small Mammals on a Mature Oil Palm Estate.
A. Shirai, D. M. Robinson, B. L. Lim, A. L. Dohany, and D. L. Huxsoll. 1978, 5p
Grant DAMD17-78-G-9440
Availability: Pub. in Southeast Asian Jnl. of Tropical Medicine and Public Health, v9 n3 p356-360 Sep 78.

Descriptors: *Rickettsia tsutsugamushi, Fluorescent antibody techniques, Mites, Mammals, Epidemiology, Malaysia, Rodents, Reprints.
Identifiers: *Infections.

No abstract available.

AD-A065 085/3GA PC **A02**/MF **A01**
Army Medical Research Inst. of Infectious Diseases Frederick, MD.
Aerosol and Intramuscular Prophylaxis of Respiratory 'Klebsiella pneumoniae' Infection in Mice and Squirrel Monkeys.
Interim rept.,
Richard F. Berendt, Mark A. Schneider, Harold W. Young, and Frank R. Frola. 23 Jan 79, 25p

Descriptors: *Klebsiella pneumoniae, *Intramuscular injections, Aerosols, Test methods, Mice, Squirrel monkeys, Preventive medicine, Clinical medicine.
Identifiers: Infections, Bacteria.

Aerosol administration and intramuscular injection were compared for kanamycin prophylaxis against respiratory Klebsiella pneumoniae infection in both mice and squirrel monkeys. Mice challenged with an LD90 of Klebsiella 0.5, 4, 24, and 48 and 72 hours after aerosol treatment with 27 mg/kg of kanamycin were significantly better protected at all time periods than were mice given 450 mg/kg by IM injection. Squirrel monkeys given 11.25 mg/kg by aerosol were completely protected against Klebsiella challenge at 6 and 24 hours whereas only 1 of 8 monkeys injected IM with the same dose survived at 6 hours and none survived at 24 hours. Antibiotic clearance curves suggested that kanamycin remained in the lungs at higher concentrations and for a longer time after aerosol than after IM treatment. (Author)

AD-A065 088/7GA PC **A02**/MF **A01**
Army Medical Research Inst. of Infectious Diseases Frederick, MD.
Legionnaires' Disease Bacteria: Replication in Alveolar Macrophages of Cynomolgus Monkeys.
Interim rept.,
R. A. Kishimoto, M. D. Kastello, J. D. White, F. G. Shirley, and V. G. McGann. 26 Jan 79, 9p

Descriptors: *Bacterial diseases, Electron microscopy, Monkeys, Alveoli, Interactions, Phagocytes.
Identifiers: *Legionnaires disease, Bacteria.

The interaction between normal cynomolgus monkey alveolar macrophages and Legionnaires' disease bacteria (LDB) was studied by transmission electron microscopy. Following ingestion of LDB, the organisms replicated within macrophages and destroyed the phagocytic cell. (Author)

AD-A065 158/8GA PC **A06**/MF **A01**
Defence and Civil Inst., of Environmental Medicine, Downsview (Ontario).
Canadian Diving Symposium (3rd) Held at Defence and Civil Institute of Environmental Medicine, on 30 - 31 October 1978.
31 Oct 78, 122p

Descriptors: *Diving, Symposia, Canada, Underwater vehicles, Remote control, Minerals, Offshore, Monitoring, Recording systems, Sapphire, Deep water.
Identifiers: MANTIS Operation, *Meetings.

Contents: Uses and Development in Remotely Controlled Underwater Vehicles in Canada; Development of a Hyperbaric Blower; Operation MANTIS, DDF First Pressurization; DCIEM Deep Diving Program; Regulations Respecting Diving Operations in Support of Offshore Mineral Resource Activity; Atlantic Marine Diving Operations Past, Present and Future (Audio-visual presentation); Dive Monitoring and Equipment - Supervision and Recording; Industry, Trade and Commerce and Underwater Canada; Innovation in Underwater Illumination - The Ballastless Gas Discharge Light; CONSTRUCTOR Diving System (Audio-visual presentation); Excavation of the Sapphire - A 1696 British Frigate; Man Underwater, Medicine and Miracles; Diving Operations in Support of Arctic Offshore Explorations; Search for an Arctic Shipwreck; Armed for Deep Water (Audio-visual presentation).

AD-A065 218/0GA PC **A02**/MF **A01**
Naval Medical Research Unit No. 3, FPO New York 09527.
Schistosomal Polyposis of the Urinary Bladder.
Technical rept.,
Jerome H. Smith, Hazem Torky, Ayoub Shehata Kelada, and Zoheir Farid. 8 May 76, 6p Rept nos. NAMRU-3-TR/11-77, NAMRU-ACC-1103
Availability: Pub. in the American Jnl. of Tropical Medicine and Hygiene, v26 n1 p85-88 Jan 77.

Descriptors: *Bladder(Urinary), *Schistosomiasis, Digestion(Biology), Reprints.

No abstract available.

AD-A065 231/3GA PC **A02**/MF **A01**
Naval Medical Research Inst., Bethesda, MD.
Oxygen-Induced Consumptive Coagulopathy and Its Enhancement by Lead Acetate.
Medical research progress rept.,
L. A. Kiesow, S. Shapiro, B. F. Lindsley, and J. W. Bless. 24 Jun 76, 10p
Abstract in French and German.
Availability: Pub. in Thrombosis and Haemostasis, n1 v37 p170-176 1977.

Descriptors: *Oxygen, *Blood coagulation, *Lead compounds, *Acetates, Time, Thrombosis, Rats, Reprints.
Identifiers: Hemostasis.

No abstract available.

AD-A065 233/9GA PC **A05**/MF **A01**
Case Western Reserve Univ., Cleveland, OH. Inst of Pathology.
Cytochemistry of Malaria Under Treatment.
Annual rept. no. 8, 1 Jan-30 Sep 78,
Masamichi Aikawa. 30 Sep 78, 90p
Contract DADA17-70-C-0006

Descriptors: *Malaria, *Cytochemistry, Electron microscopy, Hosts(Biology), Cells(Biology), Therapy.
Identifiers: Host parasite relations.

Host-parasite interaction is of major importance to malarial parasites, since parasite survival depends on host cells. Studies on the interaction are essential for better understanding of malarial parasites. During the last fiscal year we have concentrated our investigation on several aspects of the interaction between malarial parasites and host cells, and established several new characteristics on the invasion process. Studies on the interaction are essential for better understanding of malarial parasites and host cells, and established several new characteristics on the invasion process. This study showed that invasion occurs through a sequence of events that include: (1) recognition and attachment, (2) junction formation between the merozoite and host cell, (3) invagination of the erythrocyte membrane around the merozoite, and (4) sealing of the invaginated membrane to form a vacuole and to reestablish continuity of the erythrocyte membrane. The movement of the junction during invasion is an important component of the mechanism by which the merozoite enters the host cell. After completion of this work, we developed a method for blocking erythrocyte invasion by the merozoite at an early stage. Cytochalasin B-treated merozoites attached to host erythrocytes and then form a junction. However, cytochalasin blocked movement of the junction preventing further invasion. (Author)

AD-A065 244/6GA PC **A02**/MF **A01**
Armed Forces Inst. of Pathology, Washington, DC.
Cystadenofibromas of the Ovary with Epithelial Atypia,
Grace F. Kao, and Henry J. Norris. 1978, 7p
Availability: Pub. in American Jnl. of Surgical Pathology, v2 n4 p357-363 Dec 78.

Descriptors: *Neoplasms, *Ovaries, Epithelium, Histology, Case studies, Reprints.

No abstract available.

AD-A065 272/7GA PC **A02**/MF **A01**
Naval Medical Research Inst., Bethesda, MD.
Expression of Alloantigens LY-5 and LY-6 on Cytotoxic Effector Cells.
Medical research progress rept.,
James N. Woody, Marc Feldmann, Peter C. L. Beverley, and Ian F. C. McKenzie. 30 Dec 76, 7p
Availability: Pub. in The Jnl. of Immunology, v118 n5 p1739-1743 May 77.

Descriptors: *Antigens, *Cytotoxin, *Lymphocytes, In vitro analysis, Cells(Biology), Reprints.
Identifiers: *Alloantigens, T cells.

No abstract available.

AD-A065 273/5GA PC **A02**/MF **A01**
Naval Medical Research Inst., Bethesda, MD.
In Vitro Responses of CBA/N Mice: Spleen Cells of Mice with an X-Linked Defect that Precludes Immune Responses to Several Thymus-Independent Antigens can Respond to TNP-Lipopolysaccharide.
Medical research progress rept.,
D. E. Mosier, I. Scher, and W. E. Paul. 3 May 76, 9p
Availability: Pub. in The Jnl. of Immunology, v117 n4 p1363-1369 Oct 76.

Descriptors: *Antibodies, *Immunity, *Lymphocytes, Cells(Biology), Spleen, In vitro analysis, Antigens, Mice, Response(Biology), Reprints.
Identifiers: B cells, T cells.

No abstract available.

AD-A065 275/0GA PC **A02**/MF **A01**
Naval Medical Research Inst., Bethesda, MD.
A Spontaneous Temperature Sensitive Mutant of Japanese Encephalitis Virus: Preliminary Characterization.
Medical Research Progress rept.,
S. Halle, and E. Zebovitz. 20 Dec 76, 14p
Availability: Pub. in Archives of Virology, v54 p165-176 1977.

Descriptors: *Japanese encephalitis viruses, *Temperature sensitive elements, Strains(Biology), Preventive medicine, Vaccines, Reprints.
Identifiers: *Viruses.

No abstract available.

AD-A065 276/8GA PC **A02**/MF **A01**
Naval Medical Research Inst., Bethesda, MD.
A Human Cold Agglutinin Which Binds Lacto-N-NeoTetraose.
Medical research progress rept.,
Chao-Ming Tsai, David A. Zopf, Richard Wistar, Jr., and Victor Ginsburg. 5 Apr 76, 6p
Availability: Pub. in Jnl. of Immunology, v117 n3 p717-721 Sep 76.

Descriptors: *Agglutinins, Clinical medicine, Inhibition, Purification, Reprints.
Identifiers: Humans.

No abstract available.

AD-A065 306/3GA PC **A02**/MF **A01**
Johns Hopkins Univ., Baltimore, MD. School of Hygiene and Public Health.
Virus-Induced Lysosomal Enzyme Dissolution of Nasal Turbinate Cartilage.
Medical research progress rept.,
Warren W. Schultz, and Frederick B. Bang. 18 Feb 77, 21p
Grant PHS-AI-12458
Availability: Pub. in American Jnl. of Pathology, v87 n3 p667-680 Jun 77.

Descriptors: *Enzymes, Viruses, Trachea, Larynx, Cartilage, Tissues(Biology), Regeneration(Physiology), Reprints.
Identifiers: *Lysomes.

No abstract available.

AD-A065 344/4GA PC **A02**/MF **A01**
Naval Medical Research Inst., Bethesda, MD.
Bubble versus Membrane Oxygenation in Baboons Without Anticoagulants.
Medical research progress rept.,
John R. Fletcher, and Adam E. McKee. 1978, 6p Rept no. NMRI-78-80
Availability: Pub. in Surgical Forum, v29 p290-292 1978.

Descriptors: *Heparin, Membranes(Biology), Baboons, Anticoagulants, Reprints.
Identifiers: Laboratory animals.

No abstract available.

AD-A065 348/5GA PC **A02**/MF **A01**
Naval Medical Research Inst., Bethesda, MD.
T-Independent Responses in B Cell-Defective CBA/N Mice to 'Brucella abortus' and to Trinitrophenyl (TNP) Conjugates of 'Brucella abortus'.
Medical research progress rept.,
J. J. Mond, I. Scher, D. E. Mosier, M. Baese, and W. E. Paul. 16 Mar 78, 8p Rept no. NMRI-78-84
Availability: Pub. in European Jnl. of Immunology, v8 n7 459-463 1978.

Descriptors: *Antigens, *Antigen antibody reactions, Cells(Biology), Brucella abortus, Mice, Reprints.
Identifiers: Nitro compounds, Aromatic compounds.

No abstract available.

AD-A065 350/1GA PC **A02**/MF **A01**
Naval Medical Research Inst., Bethesda, MD.
Function of Autotransplanted Kidneys after 24-Hour Preservation by Hypothermic Pulsatile Perfusion or Simple Cold Storage.
Medical research progress rept.,
Alfred Small, Nicholas J. Feduska, and Stephen B. Leapman. 16 Mar 78, 8p Rept no. NMRI-78-86
Availability: Pub. in Transplantation, v26 n4 p228-232 1978.

Descriptors: Kidneys, *Kidney function tests, *Cold storage, Preservation, Perfusion, Transplantation, Reprints.

No abstract available.

AD-A065 385/7GA PC **A03**/MF **A01**
Naval Medical Research Inst., Bethesda, MD.
Ontogeny of Murine B-Cell Surface Antigens and Function.
Medical research progress rept.,
Aftab Ahmed, Allan H. Smith, Steven W. Kessler, and Irwin Scher. 1978, 28p Rept no. NMRI-78-93
Availability: Pub. in Animal Models of Comparative and Developmental Aspects of Immunity and Disease, p175-200 1978.

Descriptors: *Antigens, *Lymphocytes, *Immunization, Ontogeny, Mice, Response(Biology), Reprints.
Identifiers: B cells.

No abstract available.

AD-A065 401/2GA PC **A02**/MF **A01**
Office of Naval Research, London (England).
European Undersea Biomedical Society Annual Scientific Meeting (4th).
Conference rept.,
Robert Goad. 29 Dec 78, 10p Rept no. ORNL-C-8-78

Descriptors: *Decompression sickness, *Diving, Symposia, Biomedicine, Military medicine, North sea, Therapy, Diagnosis(Medicine).
Identifiers: *Meetings.

The 4th Annual Scientific Meeting of the European Undersea Biomedical Society was held in Luxembourg on the 12th and 13th of October 1978. This report summarizes the meeting which was concerned with the Medical Aspects of Diving Accidents, and reviews the 20 papers which were given. Presentations were divided into topics relating to one of the four following areas: (1) Unconsciousness of the Diver in the Water, (2) Diagnosis of Decompression Illnesses, (3) Treatment of Decompression Illnesses, and (4) Coincidental Injury or Illness While at Raised Environmental Pressure. (Author)

AD-A065 425/1GA PC **A02**/MF **A01**
School of Aerospace Medicine, Brooks AFB, TX.
Epidemiologic Surveillance for 'Staphylococcus epidermidis' Infections Related to Cardiopulmonary Bypass,
G. D. Lathrop, R. M. Brockett, and L. E. Blouse. 1977, 15p Rept no. SAM-TR-352
Abstract in German.
Availability: Pub. in Zentralblatt fuer Bakteriologie, Parasitenkunde, Infektionskrankheiten und Hygiene, Abteilung 1, Originale A, v241 p108-118 1978.

Descriptors: *Epidemiology, *Staphylococcus, Bacterial diseases, Monitoring, Prosthetics, patients, Mortality rates, Reprints.
Identifiers: *Cardipulmonary bypass.

No abstract available.

HRP-0011557/6GA PC **A05**/MF **A01**
Rochester Univ., NY. Systems Analysis Program.
Burn Care Facilities in the Genesee Region, An Analysis.
Martha Gamble Flint, and Elizabeth Stafford Miller. May 74, 83p

Descriptors: Forecasting, Health care costs, Health care delivery, *Health care facilities, Health care requirements, Health care, Health occupations, Health planning, Health plans, *Health resources, Local government, Medical care, Methodology, New York, State government, State regions, Strategy.

An analysis of burn care facilities in the 10 county Genesee region of New York State was made to determine which type of facilities should be availa-

ble and how many are feasible in the area on the basis of resource development and allocation. Three levels of burn care were considered, dealing with different ranges of burn severity. Special consideration was given to cost factors of burn care facilities as related to the quality of care recommended. Transportation costs and population distribution were also enumerated. Three levels of burn care facilities are defined: burn program (no specialization); burn unit (identifiable burn treatment area); and burn center (special emphasis and treatment area). An analysis of area needs was accomplished by two methods (based on population and on hospital admissions) to yield an expected daily burn census useful to establish basic bed need. A queuing technique was used to project future bed needs. By conservative calculation, the Genesee area would require up to 23 intensive care beds for burn patients. Viable alternatives for meeting this need were explored: no burn units; one burn unit at Strong Memorial Hospital, Rochester, to serve as a referral center for all other hospitals within the region; or burn units at Strong and at St. Joseph's Hospital, Elmira, each serving as a referral center for more severe burns. The latter alternative was chosen on the basis of both economy and quality of care. Calculation of the queuing model is appended.

HRP-0015874/1GA PC **A05**/MF **A01**
Pennsylvania Prison Society, Philadelphia.
Prison Medical Services in the Greater Delaware Valley.
Peter C. Buffum. Jun 76, 63p

Descriptors: Assessments, Criteria, Evaluation, Guidelines, Health care delivery, Health care services, Health care, *Health planning, Measurement, *Medical services, Methodology, Pennsylvania, Personal health services, Policies, Quality assurance, Reviews, Standards, State regions.

Prison health practices observed in four Pennsylvania county jails are described. Objectives of the report are to establish a framework for evaluating local prison health services and to bring together general materials on prison health services that are relevant to program planning and evaluation in Pennsylvania. Using structured data collection forms, efforts were made to speak with correctional administrators, prison medical staff, correctional officers, and inmates. Prison health care delivery was assessed in terms of standards and governance, basic models for service delivery, staffing patterns, sick call, hospitalization, emergency services, and health care for female prisoners. Data on the costs of prison medical services in the four counties as of 1975 are provided. It is determined that good prison care is related to adequate prison conditions and to an enlightened correctional administration. Four general recommendations to strengthen medical services in county jails are made: (1) jails should insure that there is a forum in which inmates can voice their complaints and suggestions about medical services; (2) correctional administrators should consider adding health education classes to their programs; (3) opportunities for correctional administrators and local health officials to share information about prison medical services should be increased; and (4) increased monitoring should be conducted. Appendixes contain selected standards for and references on prison health care, as well as selected citations on prison health law.

HRP-0016340/2GA PC **A03**/MF **A01**
Community Health and Welfare Council of Hennepin County, Inc., Minneapolis, MN.
Report on Community Health Screening.
Stuart U. Thorson. Feb 76, 31p

Descriptors: Ailments, Ambulatory health services, Assessments, Criteria, Diseases, Evaluation, Guidelines, Health care delivery, Health care services, Health care technology, Health care, Health planning, *Health screening, Health status, Injuries, Measurement, Methodology, Minnesota, *Personal health services, Policies, Preventive medicine, Quality assurance, Reviews, Standards.

Guidelines are presented that cover six basic components of quality health care screening programs: planning (needs and resource assessment), outreach, tests and procedures, education, followup, and evaluation. They are intended to assist persons involved in planning, implementing, and evaluating health care screening programs in communities and are based on study efforts of the Community Health and Welfare Council in Minneapolis, Minn. Health screening is defined as the identification of an unrecognized disease, defect, or condition by easily administered tests or procedures usually performed by technicians, nurses, aides, or trained volunteers. Significant issues in health screening are the importance of the individual, the inclusion of research-oriented activities, screening as a prediagnostic procedure only, professional involvement in screening, and the application of specialized screening (genetics, industrial health, commercial multiphasic screening laboratories, and child and school health). Examples of health screening sponsors in Minnesota and types of screening are cited in appendixes.

HRP-0016709/8GA PC **A02**/MF **A01**
District of Columbia Municipal Research Bureau, Inc., Washington.
District of Columbia's Medicaid Program.
Research rept. no. 5.
May 76, 20p

Descriptors: *District of Columbia, Financing, Health care costs, Health care delivery, Health care utilization, Health insurance, Health resources, Prepaid health care, Public health care, Public health insurance.

A description is given of the District of Columbia's Medicaid Program in terms of coverage, operation, costs, scope and utilization of services, and the Federal Government's role in the program. The program covers persons in the District receiving Federal public assistance and medically needy persons who qualify otherwise. The recipients are free to choose services from any providers. Total costs for the program rose to $94.5 million in fiscal 1975, with the District paying over half the expenses. Attempts to control costs of the program have concentrated on defining and limiting the utilization of services, and the scope, which has nevertheless remained broad. The large increase in private physicians' services (over 200 percent) is matched by corresponding increases in use of private pharmacies and hospitals. In addition to effects of the rise in number and rate of such utilizations, inflationary pressure contributes to higher costs. The control of inpatient hospital costs has been emphasized as the primary item of interest in considering program alternatives, such as regulating rates of reimbursement, prepaid group practice plans, expansion of auditing, and service limitations. The Federal cost sharing for the District's Medicaid program is lower than that of 38 States, in spite of the fact that the District has no regional tax base. It was concluded that besides budgeting, cost controls, utilization reviews, and financial audits of the District's program, additional Federal funding will be required to keep the program operational.

HRP-0018753/4GA PC **A03**/MF **A01**
California Office of Statewide Health Planning and Development, Sacramento.
Plan Development Manual and Statewide Policies -- Applicable for the First Health Systems Plans and the 1978 State Health Plan.
1 Jun 77, 50p

Descriptors: California, Development, Guidelines, Health care delivery, *Health planning, Health plans, *Health systems plans, Local government, Methodology, Policies, State government.

Planning guidelines and processes to enable the integration of health systems plans (HSP's) into a State health plan and a statewide health facilities and services plan mandated by the National Health Planning and Resources Development Act of 1974 are described. The plan development manual and statewide policies covered in it are applicable to HSP's in California and to the 1978 State health plan. The first part of the manual contains a timetable, procedures, and format specifications for plan development and content elements of HSP's and the State health plan. The elements include: a health service area profile; general goals and objectives; health promotion and protection, prevention and detection, diagnosis and treatment, habilitation and rehabilitation, maintenance, and personal health care; and health system enabling services. The second part of the manual deals with statewide policies for specific services: general acute care (medical/surgical, perinatal, pediatric, intensive care, and cardiac care services), general acute care (other supplemental and special services), acute psychiatric care, skilled nursing care, and intermediate care. Statewide methodologies general plan requirements, and alternatives to statewide objectives and methodologies are addressed. Additional information on plan development and implementation in California is appended.

HRP-0023879/0GA PC **A04**/MF **A01**
Personal Social Services Council, London (England).
Residential Care Reviewed -- The Report of the Residential Care Working Group Incorporating Daily Living -- Questions for Staff.
1977, 63p

Descriptors: Ambulatory health care, Ambulatory health services, Foreign countries, Health care services, Long term care, Personal health services, *Residential care services.

This report on residential care is the second in a series prepared by a working group established by the Personal Social Services Council in England. It is based on comments of staff, residents, and family members who have had personal experience with residential homes. Residential care is reviewed in terms of attitudes, routines (such as timing of rising, going to bed, and meals), privacy and personal possessions, general health matters and personal hygiene, activities and links with the community, occupations, and social needs and relationships. Among the essential components of satisfactory residential life are respect for privacy, availability of choice, stimulation, recognition of emotional needs, and opportunities to participate in organizing the pattern of life. Requirements to be met if these components are to be realized in actual practice are delineated. Other aspects of residential care covered in the report are principles and objectives of residential care, admission to residential care facilities, staff roles and functions, and management and support. An appendix contains information on fire safety in residential care facilities.

HRP-0024663/7GA PC **A18**/MF **A01**
Fogarty International Center, Bethesda, MD.
China Medicine As We Saw It.
Joseph R. Quinn. 1974, 421p DHEW/PUB/NIH/75-684

Descriptors: Foreign countries, *Health care delivery, Health care services, Personal health services, Projects, Public health services, Research and development, Research.

An anthology of articles by medical specialists who have visited the People's Republic of China is presented to report on the status and practices of medicine in China. The categories of coverage are: Chinese innovations in health, organization and status of public health services, public health practices, prevalent diseases, and biomedical research. The innovations described involve the integration of traditional and modern medicine at levels of treatment, curriculum, policy, and publishing; acupuncture; fracture management; and limb reattachment. Public health articles concern health and social services organization; financing; urban neighborhood practice; and Shanghai data. The public health practices documented are family planning, the role of nursing, food and nutrition, and the relation of occupational health to general community health. Prevalent diseases discussed are cardiovascular diseases, nasopharyngeal cancer, and schistosomiasis in the Shanghai area. Achievements in applied microbiology are cited in the research area, pointing out the impact of national policies on development of the science and providing examples of achievements including a developing antibiotics industry, agricultural uses of microorganisms, and other practical applications.

HRP-0025361/7GA Not Available NTIS
Women -- The Second Sex in the Boardroom, Too.
Herta Loeser, and Janet Falon. 1978, 3p
Pub. in Trustee v31 n2 p24-26 Feb 78.

Descriptors: Administration, Classifications, Communities, Demography, *Females, *Health care delivery organizations, Health related organizations, Health resources, Males, Private institutions, Private organizations, Sex groups.

The noticeable lack of women on governing boards of not-for-profit organizations is discussed. Presently more than 37 million persons donate time to volunteer work, mostly for not-for-profit organizations. They contribute 6 billion hours a year, valued at $26 billion. The women volunteers (60 percent) contribute services valued at $15 billion. Despite the heavy reliance of the organizations on women volunteers and the fact that women constitute half the population, the representation of women on governing boards is limited. A recent survey of 100 such organizations showed that women constitute only 23 percent of all board members and 19 percent of officers; 45 of the organizations had no women officers and 9 had no women members; and only 8 boards had more women than men as members. By category, hospitals and educational institutions had the fewest women board members (14 percent in each field). Environmental and legal and public affairs categories ranked highest in this area (31 percent women board members each). But the legal and public affairs category showed that 35 percent of the organizations surveyed showed no women officers and no women as chairpersons or presidents. It was concluded that these figures reflect the general lack of representation of women in influential positions in American society. Implications of this lack of representation were discussed, suggesting that there is a reservoir of valuable and competent women available for meaningful service on the governing boards of not-for-profit organizations.

HRP-0025385/6GA Not Available NTIS
Foss Drug Co, Moorhead, MN.
Centrally Located and Circular Rx Department Helps Us Observe and Control Our Huge Pharmacy.
Gerald Gamrath, and Mike McCormick. 1978, 4p
Pub. in Pharmacy Times p50-53 Apr 78.

Descriptors: Administration, Design, Health care delivery organizations, Health care facilities, Health care technology, Health manpower, Health occupations, Minnesota, Revisions, State regions.

An innovative pharmacy in Moorhead, Minn. is described. Features of design include a circular prescription department centered and equidistant from main entrances of a large community pharmacy, an Rx Roto-Bay drug retrieval unit which automatically rotates to the pharmacist's position for removal of prescription items needed, a pneumatic tube system which allows delivery of prescriptions directly from and to patrons parked outside in cars, a closed circuit television unit which permits two-way video and audio communication between pharmacists and drive-in clients, and a laminar flow sterile air system to cleanse the air in the pharmacists' work area. Other pharmacy innovations are customer satisfaction and pharmacists operational efficiency structures and techniques, such as providing for comfortable eye-level communication and consultation. Operation of the pharmacy's stations and equipment is procedurализed for optimum efficiency and accuracy, reducing the work load of the pharmacist and saving the customer's time. The layout of the pharmacy is also considered advantageous for observation and control of the facility and for suggesting and assisting tie-in sales. It was concluded that 4 years of operation of the pharmacy had demonstrated its effectiveness and acceptance by both pharmacists and customers.

HRP-0025519/0GA Not Available NTIS
Gartnavel General Hospital, Glasgow (Scotland).
Cost of Outpatient Chemotherapy.
K. C. Calman, J. G. McVie, M. Soukop, M. Richardson, and J. Donald. 1978, 2p
Pub. in British Medical Jnl. v1 n6111 p493-494 25 Feb 78.

Descriptors: *Ambulatory health care, *Drug therapy, Health care costs, Health care technology, Therapy.

The cost of drugs used in treating patients with cancer was examined for comparison with the cost of drugs commonly used in other chronic and acute diseases and for comparison between inpatient and outpatient treatment. Patients attending one of five outpatient oncology clinics were studied over a 2-month period. Most patients had common solid tumors such as lung, breast, gastrointestinal, gynecological, and urological neoplasms, with 90 percent of chemotherapy given on an outpatient basis. The cost of drugs included those supplied free of charge for investigative purposes and nonchemotherapeutic drugs. Over the study period there were 324 visits by patients with a total drug cost of 2433 pounds, comprising 1553 pounds for chemotherapeutic drugs and 880 pounds for other drugs. The cost of drugs per visit was calculated as 7.50 pounds. Comparison of these figures with those for acute and chronic diseases showed that the drug cost of outpatient chemotherapy for cancer patients is not particularly high, only a little higher than that for many other chronic diseases, and it is relatively cheap compared with the cost of inpatient care. It is also relatively cheap in comparison with drug treatment in acute illness. The results were interpreted as supporting the cost-effectiveness of outpatient chemotherapy.

HRP-0026287/3GA PC **A04**/MF **A01**
North Carolina Univ. at Chapel Hill. School of Public Health.
Public and Consumer Involvement in Health Planning and the Health Policy Process -- Workshop Proceedings.
1977, 58p

Descriptors: Administration, Community relations, *Consumer participation, Guidelines, Health planning agencies, *Health planning, Health related organizations, Local government, Methodology, Policies, Strategy.

The workshop summarized in these proceedings was planned and conducted by the University of North Carolina's School of Public Health in Chapel Hill. It was funded by a grant from Region IV of DHEW in Atlanta, Ga. and was cosponsored by the Health Planning/Development Agency of Atlanta and the Health Planning and Facilities Branch of Region IV. Forty workshop participants represented health planning and public health agencies in seven Southeastern States. The major goal of the workshop was to present health professionals working in health planning and public health settings with rationales and strategies for enhancing the ability of health consumers to participate in the health planning and policy process. Presentations dealt with consumer participation and social policy, reasons for consumer participation and public involvement, a consumer's view of consumer participation in health systems agencies, the role of nongovernmental institutions in health planning, board training (planning, conduct, and evaluation), the use of mass media for public involvement, and community organization as a public involvement strategy. Additional information on the workshop and its participants is contained in appendixes.

HRP-0026296/4GA PC **A03**/MF **A01**
Metropolitan Washington Council of Governments, DC. Health Information System.
Availability, Utilization and Operating Characteristics of Computed Tomography Scanners -- Metropolitan Washington, October, 1977.
28 Apr 78, 46p

Descriptors: Data processing systems, Data processing, Development, Diagnosis, Diagnostic agents, District of Columbia, Health care costs, Health care delivery organizations, Health care technology, Health care, Health occupations, Innovations, Maryland, Medical care, Methodology, Speciality services, State regions, Virginia.

The status and utilization of computed tomography (CT) scanners in the Washington, D.C. area as of October 1977 are assessed. CT scanners have greatly expanded the field of diagnostic radiology by combining radiological, computer, and photographic techniques. The procedure of CT scanning involves processing X-ray images of cross-sections of the head or body regions, and the images are reconstructed mathematically from a number of angles surrounding the body into a three-dimensional picture of internal soft tissues of similar density. For the most part, CT scans can be performed on an outpatient basis and without some of the risks associated with other neurological procedures. The use of CT scanners in the District of Columbia, Maryland (Montgomery, Calvert, Charles, Prince Georges's and St. Mary's counties), and Virginia (Arlington, Fairfax, Loudoun, and Prince William counties and the cities of Alexandria, Falls Church, Fairfax, Manassas, and Manassas Park) was surveyed. In October 1977, there were 23 CT scanners available in the metropolitan area. The majority of scanners were full-body machines capable of examining the brain and other regions of the body; the remaining were head scanners. Almost half were located in the District of Columbia. Between January and September of 1977, 20 operating CT machines scanned 20,716 patients. Patients who received CT scans had an average of 1.5 procedures. Charges for head scans ranged from $185 to $350 and charges for full-body scans ranged from $165 to $380 or $200 to $460, depending on whether contrast media were employed. Detailed tabular data are provided. The survey form and definitions of terms are appended.

HRP-0026636/1GA PC **A06**/MF **A01**
Southeastern Wisconsin Health Systems Agency, Inc., Milwaukee.
911 Planning Guide -- A Preliminary Planning Guide for a Simplified Emergency Access Telephone Number in the Southeastern Wisconsin Health Service Area.
Feb 78, 105p
Contract DHEW-000318
See also HRP-0026637 -- HRP-0026642.

Descriptors: Communications networks, Development, *Emergency medical care, Emergency medical services, Health care delivery, Health care services, Health care technology, Health education, *Health planning, Health plans, Methodology, Personal health services, Public health education, Radio communication, State regions, Strategy, Telecommunication, Wisconsin.

A planning guide was developed by the Southeastern Wisconsin Health Systems Agency Emergency Medical Services Project to assist Wisconsin counties with their 911 emergency telephone system planning. The guide introduces the 911 concept to designers and implementers of such systems, and answers basic questions about the 911 system planning process. The 911 concept is the provision of a uniform three digit telephone number (911) designated for use by the general public throughout the United States to report emergencies and request assistance. Any emergency can be called into the 911 system, the dispatcher determines the proper responding public safety agency, and aid is sent immediately. The uniform number is recommended to reduce the time period between emergency occurrence and arrival of assistance. Planning issues discussed include analysis of local jurisdictions, public safety agencies, and exchange and central office boundaries; operational models, options, and standards; administration; financing and costs; and publicity and education. A glossary of terms is included. The appendixes contain information on pending legislation, telephone tariffs and exchange boundaries, operating system review, sample mutual aid agreements, call volume considerations, city and county resolutions, and informational contacts.

HRP-0026639/5GA PC **A05**/MF **A01**
Southeastern Wisconsin Health Systems Agency, Inc., Milwaukee.
Status Report of Poisoning Care -- As It Relates to the Emergency Medical Services System in the Southeastern Wisconsin Health Service Area.
Mar 78, 93p
Grant PHS-05-P-000318-010
See also HRP-0026636 -- HRP-0026638, HRP-0026640 -- HRP-0026642.

Descriptors: Accessibility, Communities, Demography, Documents, *Emergency medical services, Health care facilities, Health care services, Health care, Health resources, Information systems, Medical care, Methodology, Morbidity, Mortality, Personal health services, Sources, State regions, Vital statistics, Wisconsin.

Poison care systems in southeastern Wisconsin are described as a first step in planning for poisoning victims in that health service area. The report presents an overview of poison care literature, poison morbidity and mortality statistics for the State and the area and its counties, and poison care capabilities in the region. In addition, an idealized poison care facility is defined in terms of facilities, personnel, and support service requirements. In reviewing present capabilities of the region's hospitals and clinics to provide poisoning care, an intensive discussion is given of the Milwaukee Children's Poison Center. Information is given on the center's purpose, philosophy, objectives, organization, evaluation, utilization, outreach efforts, and available resources. In that one center in 1977, 11,523 poisoning calls for assistance were received, 318 patients were treated in the emergency department, and 84 patients were hospitalized. The appendixes contain information on the Milwaukee Children's Hospital Poison Center, member hospital benefit list, staffing requirements and job descriptions, volunteer check-off list, phone call assistance guidelines, reference and flow charts, school promotion materials, recommended stock drugs, bibliography of textbooks and booklets on poisons available in the center, and the fiscal year 1978 budget for the center.

HRP-0026641/1GA PC **A05**/MF **A01**
Southeastern Wisconsin Health Systems Agency, Inc., Milwaukee.
Status Report of Perinatal Care -- As It Relates to the Emergency Medical Services System in the Southeastern Wisconsin Health Service Area.
Mar 78, 89p
Contract DHEW-000318
See also HRP-0026636 -- HRP-0026640, HRP-0026642.

Descriptors: Child health services, Communities, Demography, *Emergency medical services, Health care facilities, Health care services, Health manpower education, Health manpower, Health occupations, Health planning, Health resources, Medical care, Methodology, Morbidity, Mortality, Personal health services, State regions, Strategy, Vital statistics, Wisconsin.

Perinatal care systems in Southeastern Wisconsin are described as they relate to the general emergency medical services system in that health service area. The report presents criteria developed to identify different perinatal care levels, perinatal morbidity and mortality in the State and the region and its counties, and perinatal care capabilities in the region. In addition, an idealized perinatal care facility is defined in terms of facilities, personnel, and support services required. The capabilities of Southeastern Wisconsin hospitals to provide perinatal care were assessed as a vertically organized consortium to support personnel education and consultation, personnel and staffing requirements on an areawide and facility-wide basis, and facilities for both high risk obstetrical and neonatal services. Although the Southeastern Wisconsin Perinatal Intensive Care System designated is not fully operational, as of March 1978 it represents an attempt to classify hospitals vertically according to their ability to provide perinatal services, using complexity of need as the basis of classification. Significant features and capabilities of the consortium hospitals (especially level III institutions: Milwaukee Children's, Milwaukee County Medical Complex, Mt. Sinai, and St. Joseph's) were outlined for both perinatal-maternal and neonatal health services. Information on perinatal morbidity/mortality, transfer policies and protocols, available facilities, and consortium membership is presented in the appendixes.

HRP-0027053/8GA PC **A02**/MF **A01**
New Jersey State Dept. of Health, Trenton. Div. of Health Planning and Resources Development.
Implementation of the Health Planning and Resources Development Act of 1974 (P.L. 93-641) in New Jersey and Its Potential Effect on the Use of Capital by Hospitals.
John B. Reiss. 1978, 12p
Presented at a conference sponsored by J. Lloyd Associates, February 8, 1978, Hyatt Regency Hotel, Washington, DC.

Descriptors: Acute care, Health care delivery systems, Health care services, *Health legislation, Health planning, Inpatient services, Law(Jurisprudence), Methodology, *New Jersey, Personal health services, Strategy.

New Jersey's implementation of the National Health Planning and Resources Development Act of 1974 (P.L. 93-641) is discussed. Since 1976, hospitals and nursing homes have been required to establish long-range plans. By requiring such institutions to plan in concert, the State should eliminate overlapping proposals and unnecessary services. Institutions are also required to meet certain performance standards before their applications for any certificate of need will be accepted. Such standards include criteria for occupancy levels and provision of preadmission testing and discharge planning. Certificate-of-need regulations require institutions to submit specified projects for changes of plant or services to the independent review of external planning groups. Budget review provides incentives and disincentives for various kinds of hospital behavior and enhances the implementation of planning decisions. Both group practice and Independent Practice Association health maintenance organizations are in developmental and operating stages in New Jersey. It appears that this planning and regulatory system is reducing applications for new beds. In the future, a major challenge will be to reallocate resources, i.e., to change significantly the capital investment in hospitals.

HRP-0027060/3GA PC **A04**/MF **A01**
Florida State Dept. of Health and Rehabilitative Services, Tallahassee. Office of Comprehensive Health Planning.
State of Florida HMO/Medicaid Manual.
Working draft.
Jan 77, 53p

Descriptors: Financing, *Florida, Guidelines, Health care delivery, Health insurance, *Health maintenance organizations, Health planning, Health plans, Health related organizations, Health resources, HMO(Health maintenance organizations), Local government, Methodology, Models, Policies, Prepaid health care, Private institutions, Private organizations, Public health insurance, State government, Theories.

This manual on health maintenance organizations (HMO's) and the Medicaid program is designed to acquaint service providers with requirements of the prepaid medical services program for the State of Florida. The need for exploring alternative methods in the delivery of health care to Medicaid recipients is recognized by the Florida Department of Health and Rehabilitative Services. The rationale for instituting an HMO/Medicaid program is to contravene the traditional fee-for-service system and to provide incentives for cost-effective and prevention-oriented health care services. A model contract is described in which requirements to be met by service providers in the prepaid medical services program are listed: (1) provide quality medical care, including ambulatory, inpatient, and emergency services; (2) provide prevention-oriented health care services and assure continuity of care; (3) require that payments be made on a prepaid capitation basis; (4) maintain a sound and responsive administrative structure with legal and fiscal accountability; and (5) assure that medical professionals and services meet accepted medical standards. Program guidelines, elements to include in applications for service provider status in the program, and provisions of the model contract are outlined.

HRP-0027062/9GA PC **A04**/MF **A01**
Texas Area 5 Health Systems Agency, Inc., Irving.
Certified Home Health Agencies. Health Service Report.
Jul 78, 63p

Descriptors: Financing, Health care costs, Health care delivery, Health care facilities, Health care services, Health insurance, Health occupations, Health resources, Home health care services, Home nursing, Nursing care, Nursing services, Personal health services, Prepaid health care, Public health insurance, Research, State regions, Texas.

In an effort to learn more about certified home health agencies in Texas Health Service Area 5, questionnaires were mailed to agencies certified for participation in Medicare. Of 23 agencies to which questionnaires were mailed, and 4 contacted by telephone, 16 were included in the study. Overall, approximately 10,763 persons received home health services from 11 agencies in 1977. Services offered by hospital-based and community-based programs varied widely. The majority of home health care patients suffered from chronic conditions that limited their mobility and independent functioning. The most basic service offered in the area was skilled nursing care, required by Medicaid for agency certification. Medicare also requires the provision of at least one of the following: physical, speech, or occupational therapy; medical social services; or home health aide services. No agency reported vocational guidance/counseling services. Meal delivery was provided by one agency. All but two agencies offered some type of therapy. Data and narrative information on costs of home health care, sources of funding, and financing are presented. A need estimation methodology is detailed. The questionnaire is appended, and a list of references is included.

HRP-0027085/0GA PC **A07**/MF **A01**
Health Care Financing Administration, Washington, DC.
Medicare: Health Insurance for the Aged and Disabled, 1976. Section 1.1, Reimbursement by State and County.
1976, 107p HCFA-018/6-78

Descriptors: Financing, Health care delivery, *Health insurance, Health resources, Prepaid health care, Public health insurance, United States.

An extensive series of tables containing data on enrollment and reimbursements by State and county under Medicare in 1976 is presented. For groups of metropolitan and nonmetropolitan counties and for each State and county, figures on the number of persons enrolled under Medicare as of July 1, 1976 and amounts reimbursed during calendar year 1976 to or on behalf of insured persons are provided. The data are further subdivided according to types of coverage available under Medicare: hospital insurance, and supplementary medical insurance. Reimbursement data for all Medicare beneficiaries and by specific category of eligibility (age, disability, and chronic renal disease) are given. The statistical system of the Medicare program is based on four related computer records: health insurance master file, provider record, hospital insurance utilization record, and medical insurance payment record. Total reimbursements in 1976 were $11,496 million for hospital insurance, with a monthly average per person enrolled of $41.80, and $4,141 million for supplementary medical insurance, with a monthly average per person enrolled of $15.37. Provisions of the hospital insurance program and supplementary medical insurance program of Medicare are detailed, with consideration given to eligibility, financing, administration, and health maintenance organizations.

HRP-0027093/4GA PC **A07**/MF **A01**
Texas Area 5 Health Systems Agency, Inc., Irving.
Patient Migration Report.
Oct 77, 149p

Descriptors: Acute care, Health care delivery, Health care facilities, Health care utilization, Health care, Health occupations, Inpatient care, Measurement, Medical care, Methodology, *Patients, Research, State regions, Texas.

Patient origin data have been compiled by the Department of Research and Data Management in the Texas Area 5 Health Systems Agency, Inc., based upon 1977 data made available by hospitals throughout Texas and in conjunction with a statewide patient origin study conducted annually by the Texas Department of Health. The statewide study is conducted to collect information on the extent to which local residents utilize hospitals located in the area where they reside, the extent to which local hospitals are utilized by persons residing outside the area where the hospitals are located, and the extent to which local residents utilize hospitals outside the area where they reside. General hospitals throughout the State were mailed

survey forms. The sample included 41,334 inpatients from hospitals representing 62,564 beds with an average occupancy rate of 66.1 percent. Included in the sample were 9,312 inpatients from 94 hospitals located in Texas Area 5, with 14,110 beds representing an average occupancy rate of 66 percent. From a regional perspective, the following patient migration patterns were evident in 1977: 8,553 resident patients, 759 inmigration patients, 9,312 total patients, 233 outmigration patients, and 8,786 total resident patients. The service ratio was 97.3. Detailed data are tabulated by county for the region.

HRP-0027111/4GA PC **A08**/MF **A01**
Orkand Corp., Silver Spring, MD.
Analysis of Responses to the Draft National Guidelines for Health Planning -- Supplement to November 22, 1977 Report.
1977, 169p
See also Summary rept. dated 4 Nov 77, HRP-0027109, report dated 22 Nov 77, HRP-0027110, Supplement to report dated 9 Dec 77, HRP-0027112.

Descriptors: *Guidelines, Health care delivery systems, Health legislation, *Health planning, Law(Jurisprudence), Methodology, Policies, Regulations, United States.

Comments received regarding proposed national guidelines for health planning proposed in the Federal Register on September 23, 1977 are presented in a series of exhibits. Cumulative tallies provide an overview of 5,064 responses from planning agencies; financial intermediaries; consumers; health associations; Federal, State, and areawide health programs and agencies; service providers; philanthropic, educational, and research organizations; and others. Information on the number of responses by type of respondent, location, and guideline is given. The guidelines focus on general hospitals (bed-population ratio and occupancy rate), obstetrical services, pediatric inpatient services (number of beds and occupancy rate), neonatal intensive care units, open heart surgery, cardiac catheterization unit services, radiation therapy, computed tomographic scanners, and end-stage renal disease. The review and analysis process and the respondent categorization and coding scheme are detailed in appendixes.

HRP-0027164/3GA PC **A02**/MF **A01**
West Side Health Planning Organization, Chicago, IL.
Strategies for Board Training.
Danny K. Davis. 1975, 14p

Descriptors: Administration, *Boards, Community relations, Consumer affairs, *Consumer participation, Councils, Health planning agencies, Health related organizations, Local government.

The rationale and principles for public participation in consumer boards are discussed in a presentation for the 1975 National Association of Neighborhood Health Centers Annual Convention. Boards serve as a manifestation of democratic principles and a means of utilizing collective wisdom, of securing general community support, and of creating a liaison with related enterprises. The individual should participate to exercise citizenship responsibilities, to gain knowledge of community needs, to protect community interests, and to propagate information in the community. Boards need to understand: their goals and operating procedures; the role of communication; principles of leadership, of effective participation, of group decisionmaking, and of evaluation of problemsolving efforts; management theory; cooperation; and group and individual needs. A list of general board activities is provided. Operation of the board can be improved through cultivating the relationship between board and executive staff to define jointly responsibilities of both groups. To keep abreast of change, the board must constantly evaluate itself, note new trends, and find more effective ways of transacting business; meetings can be made more efficient by establishing routine procedures, by preparing thoroughly, by presenting reports well, by reserving maximum time for discussion, by maintaining informality, and by keeping meetings brief. A short bibliography is furnished.

HRP-0027277/3GA PC **A04**/MF **A01**
West Michigan Health Systems Agency, Grand Rapids.
Evaluation of Regional Health Care.
Sep 77, 68p STUDY-77/15, WMHSA/STUDY-77/15

Descriptors: Evaluation, Health care delivery, Health related organizations, Health resources, Health systems agencies, HSA(Health systems agencies), Michigan, Programs, Projects, Reviews, State regions.

The Executive Committee of the West Michigan Health Systems Agency (WMHSA) requested an evaluation of the Regional Health Care (RHC) Program to answer numerous unresolved questions that arose during past annual reviews of the RHC grant applications. Numerous recommendations resulted for the administration, the medical and dental departments and for nursing and social services. It was recommended that there be more acceptable and equitable representation on the board of the RHC and that the RHC should reduce its costs so that charges and costs are more in line. Administrative staffing should be evaluated in terms of productivity and cost and the RHC should improve its accounting system. Measurable goals and objectives should be established for all employees. It was also recommended that a more accurate, reliable and consistent data processing service should be applied. The nursing staff should be involved in policymaking decisions and greater emphasis should be placed on the social work department. An appendix is included which contains a dental fee schedule and a schedule of discounts, financial information, maps, locations of RHC registrants by zip code, public hearing information, utilization statistics and Bureau of Community Health Service reporting requirements.

HRP-0027281/5GA PC **A02**/MF **A01**
National Labor Relations Board, Washington, DC.
American Society on Law and Medicine National Conference -- 'Health Care Developments'.
John S. Irving. 22 Sep 78, 21p

Descriptors: Administration, Allied health personnel, *Health care delivery organizations, Health care, Health legislation, Health manpower, Health occupations, Health resources, Job analysis, Law(Jurisprudence), Legislation, Licensed practical nurses, Nurses, Physicians, Registered nurses, Regulations.

A representative of the National Labor Relations Board addresses developments in labor practices involving health care institutions. In 1975, nonprofit health care institutions were brought under the jurisdiction of the board. From 1975 to 1977, there was a decline in the number of unfair practice cases filed before the board. There were 1,740 unfair labor practice cases involving health care institutions and 1,110 representation cases in 1977. Of the representation cases, unions won about 54 percent. The Ohio Valley Hospital Association decision by the board is cited as a significant one; a board majority held that house physicians and emergency room physicians can be excluded from a unit of all other professional employees. With the Ohio Valley decision, the board has approved a six-level structure of appropriate units in health care institutions: physicians, registered nurses, all other professional employees, technical employees (including licensed practical nurses and licensed vocational nurses), business office clerical staff, and service and maintenance employees. Various cases brought before the board and the implications of their resolution are discussed.

HRP-0027293/0GA PC **A03**/MF **A01**
Southeastern Association of Health Systems Agency Executives.
Progress Through Participation -- Health Planning in the Southeast.
30 Jan 78, 27p

Descriptors: Administration, Alabama, Community relations, Consumer participation, Development, Florida, Georgia, Health care delivery systems, Health legislation, Health occupations, Health planning agencies, *Health planning, Health related organizations, Health resources, Health systems agencies, HSA(Health systems agencies), Kentucky, Law(Jurisprudence), Local government, Methodology, Mississippi, North Carolina, Ohio, Regions(United States), South Carolina, Strategy, Tennessee.

Cooperative efforts between consumers and providers of health care are examined in this report compiled by 41 health systems agencies (HSA's) serving nine Southeastern States. Selected events in the passage of legislation and the development of guidelines on health planning are traced in chronological order. The purpose of the National Health Planning and Resources Development Act of 1974 (P.L. 93-641) and responsibilities of HSA's and national health priorities under the act are delineated. All but three of the HSA's have developed and established health systems plans and annual implementation plans. All HSA's are nonprofit corporations formed solely for the purpose of health planning and development functions, with governing bodies whose members are health service area residents serving without pay. The populations of health service areas range from 217,000 to 2,345,000 persons. HSA tasks related to the planning process are: assembling data, analyzing the status of health, analyzing the status of the health care system, evaluating patterns of health resource utilization, and determining community perceptions of health needs in order to establish local goals and objectives. Health plans and work programs have been devised for achieving community-identified goals and priorities in 38 of the HSA's. Progress in implementing the plans and in reviewing comprehensive health planning efforts is examined. The importance of public participation and public information in health planning and implementation activities is discussed. A list of the HSA's by health service area in Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, Ohio, South Carolina, and Tennessee is included.

HRP-0027304/5GA PC **A02**/MF **A01**
Southern Regional Education Board, Atlanta, GA.
Influencing the Distribution of Physicians -- Manpower Policy Strategies.
Issues in higher education series no. 13.
1978, 10p

Descriptors: Communities, Demography, *Distribution, *Health manpower, Health occupations, Health planning, Health resources, Methodology, *Physicians, Recruiting, Rural planning, Theories.

Although most health manpower shortages have been corrected, there is a great disparity in the geographic and specialty distribution of health manpower, particularly physicians. Simply having sufficient health manpower available does not assure adequate delivery of health services to all segments of society. Health personnel are generally not attracted to, and do not remain in areas that are economically depressed, geographically remote, and sparsely populated. Even with a greatly increased emphasis on programs to solve the distribution problem, there are likely to be some rural areas that will remain medically underserved due to geographic isolation, low population density, and a number of other factors. The following strategies are designed to influence the distribution of physicians: (1) provide more quality opportunities for residency training in the State as a whole and in rural areas; (2) increase scholarship and loan forgiveness programs with corresponding increases in dollar amounts and penalties involved; (3) establish a reimbursement system for rural practice that at least equals that for urban practice; (4) give preferential admission to residents of rural areas; (5) alter the undergraduate medical education process, include rural preceptorships, and provide greater emphasis on human and behavioral factors and prevention of illness; (6) establish or expand area health education centers and primary care residencies associated with them; (7) review and revise licensure acts relating to physicians' assistants and nurse practitioners; and (8) provide support to community recruitment and retention efforts for health manpower. References are included.

HRP-0027418/3GA PC **A13**
Becker Research Corp., Boston, MA.
Public Appraisal of Nursing Homes and the Elderly in Massachusetts.
1978, 288p

Descriptors: Age groups, Attitudes, Classifications, Communities, Data acquisition, Data collection, Data processing systems, Demography, Health care services, Health care, Health consumers, Health surveys, Inpatient services, *Long term care, *Massachusetts, Measurement, Methodology, Personal health services, Surveys.

About 600 residents of Massachusetts were interviewed by telephone to ascertain their opinions about the elderly and the quality of nursing homes. All their responses were broken down by sex, location, age, and income. Some responses were broken down into further subgroups. Few claimed to know much about nursing homes but most had a favorable impression of them. Most respondents also felt that there were too few nursing homes in Massachusetts. Although most felt that nursing homes should not be run by the Government and should be operated as profitmaking institutions, most also felt that nursing homes should be subject to more Government regulations. Those who favored more regulation thought that it would improve the quality of care administered. Most people were willing to accept an elderly relative into their homes, although fewer than one in three homes had sufficient space to accommodate an elderly person and half of the homes were vacant during the day. One in 20 had an elderly relative living in their home, while almost 1 in 5 had an elderly relative in a nursing home.

HRP-0027530/5GA PC **A03**/MF **A01**
National Institutes of Health, Bethesda, MD.
Changes -- Research on Aging and the Aged.
1978, 36p

Descriptors: Age groups, Aging(Biology), Classifications, Clinical medicine, Communities, Demography, Geriatrics, Gerontology, Health care services, Health care technology, Health care, Personal health services, Psychology, Social psychology, Social work, Socioeconomic status, Sociology.

Changes that occur with age are examined, from the standpoint that changes are not always associated with decline. It is envisioned that the elderly population in the 1980's will be generally better educated, more affluent, and more accustomed to regarding social services and support as rights. Government at all levels pays $20 billion annually to provide personal health care for the elderly. Research has provided information on the distinction between functional disorders such as depression and organic brain syndromes caused by physical illness or drug intoxication and on the relationship of physical ailments such as diabetes mellitus or cerebral arteriosclerosis to signs of mental disturbance such as confusion. Alternatives to institutional care exist and are, in part, supported by an income policy (Social Security) that includes supplemental security income, Medicare, and Medicaid. The National Institute on Aging is concerned with the present and future environments in which the elderly live and will live, and its goals reflect this concern. Goals or issues for research pertain to disease and aging (immunity and aging, drugs, and the aging mind), the elderly in society (attitudes, values, dependency, and retirement), and stress. Research methods, models, and techniques are detailed.

HRP-0027544/6GA PC **A04**/MF **A01**
Hospital Association of New York State, Inc., Albany.
Report of the Task Force on Regulation.
1976, 59p

Descriptors: Administration, Assessments, Comments, Coordination, Criteria, Evaluation, *Government agencies, Health care delivery organizations, Health care delivery systems, Health care, Health planning agencies, Health related organizations, Health resources, Local government, Methodology, *New York, *Regulations, Reviews, Standards, State government.

Duplication of efforts by the 164 regulatory agencies with jurisdiction over hospitals in New York is criticized in a study by the Hospital Association of New York State. The background and objectives of the Task Force on Regulation, as well as the new emphasis on government hospital regulation, a Task Force/General Accounting Office study on Medicare program administration, and the regulatory bureaucracy are reviewed. It is argued that while hospital regulation is necessary, the existing number of agencies is excessive, that many of them are interested in matters other than patient care, e.g., administrative, financial, and information services, and that the numerous regulations are frequently contradictory. Recommendations include immediate development of a more systematic national health policy, review of the 25 DHEW units regulating hospitals, establishment of a State Health Services Commission to develop policy and to eliminate duplication, direction of utilization review activities exclusively by the professional standards review organizations, recognition of due process as a component of all State regulatory operations, study of standards for an acceptable level of care, and enactment of veto for the Legislature over Executive regulations exceeding legislative intent. Five appendixes show survey highlights, methodology and findings, a task force roster, the task force subcommittee, and a list of agencies identified.

HRP-0027546/1GA PC **A02**/MF **A01**
National Center for Health Statistics, Hyattsville, MD. Div. of Health Resources Utilization Statistics.
Overview of Nursing Home Characteristics -- Provisional Data From the 1977 National Nursing Home Survey.
Mark R. Meiners. 6 Sep 78, 13p

Descriptors: Health care costs, *Health care facilities, Health care services, Health care utilization, Health manpower, Health resources, Inpatient care, Inpatient services, Intermediate care facilities, Long term care, *Nursing homes, Patients, Personal health services, Skilled nursing facilities, United States.

Provisional statistics as of 1977 on the characteristics of approximately 18,300 nursing homes in the coterminous United States are presented. The data are provisional in that they are based on a subsample of about 340 of 1,700 facilities in the national survey. Estimates are presented according to facility characteristics by type of ownership, certification status, facility bed size, and geographic region. The sample design for the survey involved two stages: selection of facilities, and selection of residents, discharges, and staff from sample facilities. Interviews with administrators provided data on the facilities, and interviews with accountants resulted in cost data. Both narrative and tabular data on skilled nursing facilities, intermediate care facilities, employees, utilization, cost of providing care, and charges for care are provided. Technical notes on the statistical procedures used in data analysis are included.

HRP-0027677/4GA PC **A02**/MF **A01**
National Association of Coordinators of State Programs for the Mentally Retarded, Inc., Arlington, VA.
Income Maintenance and the Developmentally Disabled. An Analysis of Policy Issues. Summary of Findings and Recommendations.
10 Mar 78, 19p
Grant DHEW-HS-54-71156

Descriptors: Assessments, Criteria, Evaluation, Health care costs, Health care delivery systems, Health care services, Health care, Mental health care, Mental health services, Personal health services, Regulations, Reviews, Standards.

The findings of a report on policies and regulations relating to income maintenance payments for developmentally disabled persons are summarized. It is recommended that the Social Security Administration (SSA) revise its present criteria for mental retardation, include a new autism subcategory, issue definitive standards for nonexertional limitations, and notify claimants of reasons for benefit denials; that goals of Federal rehabilitation programs be coordinated to give maximum access to the severely disabled; that variations in rehabilitation referral rates between States be investigated; that procedures to assure appropriate treatment to children be strengthed; and that work assistance programs and special benefit programs for adults disabled in childhood be developed and specific measures be implemented to allow the disabled maximum opportunity to work. Measures should be taken permitting the disabled to live in the least restrictive noninstitutional environment, and the SSA should recruit representative payees and provide guidelines for their activities and reporting responsibilities.

HRP-0027746/7GA Not Available NTIS
George Washington Univ. Medical Center, Washington, DC.
Variation Among Physicians in Use of Laboratory Tests. II. Relation to Clinical Productivity and Outcomes of Care.
Marcia Daniels, and Steven A. Schroeder. 1977, 6p
See also Part I, HRP-0018628.
Pub. in Medical Care v15 n6 p482-487 Jun 77.

Descriptors: Ambulatory health services, Health care costs, Health care delivery, Health care services, Health care, Health manpower, Health occupations, Measurement, Medical care, Medical personnel, Methodology, Performance tests, Personal health services, *Physicians, Quality assurance, Research.

Variation in use of the laboratory among 13 faculty internists caring for a group of ambulatory patients with hypertension is described. Laboratory use is correlated with variations in clinical outcomes and clinical productivity. Data were collected on three different aspects of the individual practices of the faculty internists: cost of laboratory use, clinical productivity, and outcomes of care. The laboratory cost profiles of each internist were determined by tabulating the number and costs of laboratory tests, X-ray studies, and radioactive isotope scans ordered by the internist and conducted as a result of a regular office visit. Clinical productivity was defined by two independent methods. An explanation of these methods is provided. Outcomes of care were limited to assessment of blood pressure control of the hypertensive patients. Tables and figures illustrate the results of the study. It is noted that the correlation between lab use profiles and outcomes was negative but not significant. Correlations between each estimate of productivity and laboratory use are said to have been negligible. There is no positive association between a physician's frequency of laboratory use and either outcome of care or clinical productivity.

HRP-0027831/7GA PC **A08**/MF **A01**
Pierce County Health Council, Tacoma, WA.
Pierce County Nursing Home Development Guide.
Apr 78, 154p
Grant PHS-HRA-10-55000

Descriptors: Accessibility, Assessments, Criteria, Documents, Evaluation, Health care delivery, Health care services, Health care, Health occupations, Information systems, Inpatient services, *Long term care, Measurement, Methodology, Personal health services, Projects, Quality assurance, Reviews, Sources, Standards, State regions, Washington(State).

In 1976 the Pierce County (Wash.) Health Council initiated a project with the objectives of (1) assessing the status of the area's long-term health care resources and (2) formulating recommendations concerning the development of these resources. This document summarizes the work of the first year, which concentrated on nursing home care. Developed by a committee of providers and consumers, the guide is intended to provide information and guidance to the community with a view towards helping its members to make informed decisions about long-term care resources, and to establish criteria to be used in review of applications from nursing homes. It is organized around seven major goals, each of which relates to an area of nursing home care. These areas include a comprehensive system, availability of care, patient services, acceptability of care, manpower, service coordination and public education, and financing. The goals are accompanied by subgoals, standards to be met, recommendations for change, a discussion of major issues surrounding the goal and subgoal, and a description of the current status of the area under consideration. A bibliography is included.

HRP-0027838/2GA PC **A05**/MF **A01**
Indiana Univ. at Bloomington. School of Public and Environmental Affairs.

Curriculum for Strengthening Capacities of Area Agencies on Aging and Service Providers -- A Technical Assistance Manual.
31 Mar 76, 90p
See also Annotated Bibliography, HRP-0018518.

Descriptors: Administration, Community relations, *Elderly persons, Financial management, Gerontology, Health care services, Health care, Health planning agencies, Health related organizations, Methodology, Orientation(Training), Personal health services, Personnel management, Public relations.

The findings of a 1976 project to identify the informational and training needs of State and area agencies on aging are presented. Project tasks included a literature review, site visits to area agencies and selected projects, a conference on potential manual users, and production of the technical assistance manual. Training recommendations to relieve problems relate to establishment of training programs for social action planners, with community power structure identification and needs assessment; internal operations tasks, such as scheduling, personnel, funding, information utilization, budgeting, decisionmaking, agency organization, office management, taxation, insurance and legal services, and project termination; financial management functions, such as accounting, auditing and costing techniques; evaluation techniques; and data system maintenance. The training needs of area agencies, boards and advisory groups, and service providers, as they relate to understanding the nature of the clientele, the community in which the programs operate, the Old Americans Act, and other governmental programs which have an impact on senior citizens are described.

HRP-0027840/8GA Not Available NTIS
Johns Hopkins Univ., Baltimore, MD. Dept. of Population Dynamics.
Sex, Illness, and Medical Care -- A Review of Data, Theory, and Method.
Constance A. Nathanson. 1977, 13p
Pub. in Social Science and Medicine v2 n1 p13-25 Jan 77.

Descriptors: Classifications, Communities, Data, Demography, Females, Foreign countries, Health care delivery, Health care indexes, *Health care utilization, Health care, Health occupations, Health statistics, Indexes(Ratios), Males, *Morbidity, *Mortality, Projects, Psychology, Research and development, *Sex groups, Socioeconomic status, Sociology, Vital statistics.

Data related to the sex differences in morbidity, mortality, and the use of health services in European and North African countries are reviewed. It is noted that male mortality rates are higher than female mortality rates in all developed countries. It is further observed that in all countries for which data are available, women report greater use of available health services than do men. Women also report more acute illness. A discussion is provided of the systematic variations in this pattern of sex differences by cause of death, disease, age, and marital status. The methodological and theoretical issues that arise in the evaluation and interpretation of these data are examined. It is noted that social and psychological concomitants of gender identity seem to play a role in accounting for observed sex differences in health status. Some directions for further research into sex differences are discussed. It is suggested that there is a need for greater refinement and clarification of the health indexes currently (1977) employed. It is also recommended that research be focused on the study of deliberately selected variations, both in sex-linked behavior patterns and in illness and utilization patterns.

HRP-0027843/2GA Not Available NTIS
Liverpool School of Tropical Medicine (England). Dept. of Tropical Community Health.
Primary Medical Practice in the United Kingdom and the United States.
Derek Robinson. 1977, 6p
Pub. in the New England Jnl. of Medicine v297 n4 p188-193 28 Jul 77.

Descriptors: Foreign countries, Health care costs, *Health care delivery, Health care services, Health manpower, Health occupations, Income, Medical services, Personal health services, Physicians, Research, *United States.

A comparison is made between primary medical practice in the United States and in the United Kingdom. In the United Kingdom, primary physicians soon reach the limit of their earnings. In the United States, such physicians can expect their incomes to increase for as long as 30 years following their graduation from medical school. British primary care physicians are said to be less likely than Americans to seek a second physician's advice. It is pointed out that in the United Kingdom, emphasis is on continuity and home-based care, supported by a nationwide network of paramedical and social services, whereas in the United States, the emphasis is said to be on diagnosis. It is observed that the American medical profession is more exposed to external criticism and that future conflict and preoccupation with survival are American phenomena. British physicians are said to be more pressed by work demands than their American counterparts. House calls in Britain far outweigh the commitment of American physicians to their hospitalized patients. House calls in the United States are nearly a thing of the past. In Britain, it is suggested, kindness is more important to patients than applied medical technology.

HRP-0027848/1GA Not Available NTIS
National Center for Health Services Research, Hyattsville, MD.
Study of the Health Status of the Black Population in Alameda County, California.
Martin K. Chen, and William Evans. 1978, 6p
Pub. in Medical Care v16 n7 p598-603 Jul 78.

Descriptors: California, Classifications, Communities, Demography, Economic conditions, Emergency medical care, Ethnic groups, Health care facilities, Health care utilization, Health care, Health occupations, *Health status, Measurement, Methodology, Morbidity, Mortality, Socioeconomic status, State regions, Vital statistics.

This study, which attempted to compare the overall health status of blacks and whites in Alameda County, Calif. in 1974, used an index based on the mortality and disability experiences of the two groups. The index is said to require disease specific mortality and disability data. It is noted that the index can be adapted to utilize existing data files which contain data on mortality and indicators of disability or morbidity. It was determined that in 1974 blacks lost approximately 10,000 productive years through higher mortality and disability rates, regardless of whether days in bed or days indoors were used as indicators of disability or morbidity. It is suggested that the classification of Spanish or Mexican Americans as whites in the data file may have resulted in the underestimation of the discrepancy in mortality and disability experience between the two populations. It is noted that blacks, as well as low-income patients, tend to use hospital emergency rooms more frequently than whites as a source of primary care, tend to postpone care until the illness or disease has progressed to a more severe stage, and, in general, lack the continuity of care enjoyed by more affluent populations.

HRP-0027851/5GA Not Available NTIS
Vanderbilt Univ., Nashville, TN.
Physician Participation in State Medicaid Programs.
Frank Sloan, Janet Mitchell, and Jerry Cromwell. 1978, 33p
Contract SSA-600-75-0212
Pub. in Jnl. of Human Resources v13 Suppl p212-245 1978.

Descriptors: Financing, Foreign medical graduates, Guidelines, Health care delivery, Health care services, Health insurance, Health manpower, Health occupations, Health planning, Health resources, Medical services, Methodology, Personal health services, Physicians, Policies, Prepaid health care, Public health insurance, Public health services.

An inquiry is provided into the determinants of private physician participation in State Medicaid programs. It is pointed out that the reimbursement practices of third-party payers probably play a part in determining whether or not a physician participates in the program. A theoretical analysis of physician participation in payment-in-full programs such as Medicaid is provided. The results of a national survey of physicians are presented. Measures of administrative burden and collection costs, payment delays, time-consuming insurance forms, and frequently returned claims were cited as deterrents to Medicaid participation. Almost half of the nonparticipating physicians cited low fee schedules as the reason for nonparticipation. The empirical specification of the Medicaid participation equation is provided. The next section presents empirical results. A summary of the study is provided and policy implications are examined. It is pointed out that the physician's decision to accept Medicaid patients is based on a mix of supply, demand, and Medicaid policy factors. It is also noted that office-based, foreign medical school graduates are more likely to treat Medicaid patients than their domestically trained colleagues.

HRP-0027890/3GA Not Available NTIS
World Health Organization, Geneva (Switzerland).
Challenge for Human Development -- Primary Health Care.
Aleya El-Bindari Hammad. 1978, 4p
Delivered at the International Congress of the World Federation of Public Health Associations (2nd) and annual Conference of the Canadian Public Health Association (69th), Halifax, Nova Scotia, Canada, May 23, 1978.
Pub. in Canadian Jnl. of Public Health v69 n4 p280-283 Jul-Aug 78.

Descriptors: Guidelines, Health care services, Health planning, Medical services, Methodology, Personal health services, Policies, Strategy.

A discussion of various issues and components of primary health care is provided. Health, it is pointed out, must be seen within the total framework of human development. It is said to be a waste of time simply to plan how to cure diseases; what is needed is a concerted effort towards health promotion and disease prevention. Primary health care is concerned primarily with the health and well-being of the people. As an approach, primary health care aims at meeting the population's priority needs. It is recommended that a national policy for primary health care be formulated. The formulation of such a policy must be followed by a planning and programming process undertaken at all levels in an interdisciplinary and intersectoral manner. There must be an equitable allocation of resources. The supportive infrastructure for primary health care is examined. It is pointed out that one of the most important supportive elements in primary health care is the production and provision of essential drugs for wide distribution. Primary health care is said to be an indigenous process which each country must operate within its own sociopolitical context and resource capabilities.

HRP-0027891/1GA Not Available NTIS
Computerized Tomography (CT) Scanner -- When Is It Feasible for Your Hospital.
John G. Larson. 1978, 3p
Pub. in Hospital Financial Management v32 n10 p15-16, 18 Oct 78.

Descriptors: Acute care, Administration, Assessments, Comments, Diagnosis, Diagnostic agents, Evaluation, Feasibility studies, Financial management, Guidelines, *Health care delivery organizations, Health care delivery, Health care requirements, Health care services, Health care technology, Health care, Health occupations, Health planning, Health related organizations, Health resources, Hospital administration, Inpatient services, Measurement, Medical care, Methodology, Organization theory, Personal health services, Policies, Programs, Research, Reviews, Shared services.

This discussion focuses on the question of when it is feasible for a hospital to have a computerized tomography (CT) scanner. The first step in the feasibility study is said to be identification of the basic types of CT scanners on the market and the range of purchase prices. There are three basic options: the head unit (new or used), a full-body unit (new or used), and a mobile head or full-body unit. A discussion of each of these three options is provided. It is noted that a sharing concept was originally applied to CT scanners by encouraging

one hospital to buy a unit and share it with surrounding hospitals. Since many physicians are reluctant to transport patients, the sharing concept was a failure. Before a CT scanner is purchased, potential demand should be determined. Several formulas for determining demand are provided. It is also pointed out that the likelihood of obtaining approval from the health planning agencies must be carefully considered. Additional criteria which must be addressed are noted.

HRP-0027893/7GA Not Available NTIS
American Hospital Association, Chicago, IL. Dept. of Health Planning and Delivery.
Simplistic Guidelines Won't Work.
Carol A. Lively. 1978, 5p
Pub. in Hospitals, Jnl. of the American Hospital Association v52 n19 p79-83 1 Oct 78.

Descriptors: Assessments, Comments, Criteria, Evaluation, *Guidelines, Health care delivery, Health care, *Health planning, Health related organizations, Health resources, Measurement, Methodology, Nonprofit, Policies, Private institutions, Private organizations, Professional organizations, Quality assurance, Reviews, Standards.

A discussion is provided of the controversy generated by the National Guidelines for Health Planning and by appropriateness review. These functions are assigned to health systems agencies. The national guidelines and the appropriateness review activity have not always taken into consideration the many problems to be faced by the planning agencies in applying the established guidelines. A letter from the American Hospital Association to DHEW is included. The letter deals with the application of national guidelines in the health planning and decisionmaking process. It is pointed out that each of the 11 standard guidelines has a major impact, but the most controversial standards are those dealing with hospital beds, occupancy rates, and obstetrics. A discussion of these three standards is provided. An acceptable definition of appropriateness review is called for. It is suggested that sound preparation of a health systems plan would include assessment of the appropriateness of facilities and services, not as a review function but as part of the planning process.

HRP-0027925/7GA Not Available NTIS
Ohio State Univ., Columbus.
Community Mental Health Ideology -- A Problematic Model for Rural Areas.
Bonnie Berry, and Ann E. Davis. 1978, 7p
Pub. in American Jnl. of Orthopsychiatry v48 n4 p673-679 Oct 78.

Descriptors: Health care services, Health education, Health occupations, Health planning, *Mental health services, Methodology, Personal health services, Physicians, Public health education, *Rural health services, Rural planning, Theories.

An examination of the realities of rural community mental health services is provided. It is pointed out that clinics located in rural areas have problems that are different from those of urban clinics. These problems are said to require a reexamination of the fairly uniform application of community mental health ideology to all areas of society. Two problems are cited: (1) the rural population lacks education about psychiatric care and emotional disorders; and (2) the urban-born and trained mental health professional often has a problem relating to the culture of the rural area. Since many rural areas contain a number of politically separate towns, a clinic designed to serve a number of such towns often has problems establishing an identity as a resource to all of them. The contemporary psychiatric concept that espouses family involvement as a desired aspect of care is said to create problems as well. It is said to be difficult to encourage autonomy in a rural patient with an uncooperative family. Suggestions are made regarding the improvement of mental health services to rural people. The need for long-term community education is stressed and the desirability of using indigenous workers is emphasized. The backup services of local physicians are also considered important.

HRP-0027950/5GA Not Available NTIS
University of Southern California, Los Angeles. School of Medicine.
Epidemiologic Methods for Human Risk Assessment.
T. M. Mack, M. C. Pike, and J. T. Casagrande. 1977, 15p
Pub. in Cold Spring Harbor Conferences on Cell Proliferation v4 Book C p1749-1763 1977.

Descriptors: California, Environmental health, Guidelines, Health care delivery, Health planning, Methodology, Policies, Projects, Research and development, State regions.

A discussion is presented of the role of epidemiology in the assessment of human risk from cancer. It is pointed out that epidemiologists normally deal with epidemics by interpreting the disease pattern, testing various hypotheses, and synthesizing the risks and various options. Cancer epidemiology is divided into these three steps. Each step is then illustrated by an example. The interpretation of descriptive epidemiology is explained. In Los Angeles County, each new cancer diagnosis is identified by screening all pathology records and death certificates. After a classification of the cases by site and cell type, the pattern of incidence for any given tumor is examined. The analysis is intended to identify any unexpected features in a pattern so that useful hypotheses can be formulated or amended. The next step is to describe the association between a putatively causal exposure and a disease. The feasibility of such a study is said to be limited by sample size. The final step is the gathering of pertinent biologic information into a comprehensible summary so that policy can be formulated. At this point, risks and benefits must be weighed. It is noted that as laboratory scientists continue to develop methods of detecting potential risks in the environment, more and more research cases will be passed on to epidemiologists.

HRP-0027954/7GA Not Available NTIS
Timberlawn Psychiatric Hospital, Dallas, TX.
Day Care Complements Hospitalization.
Don Cawley, and Carolyn Kelly. 1978, 3p
Pub. in Hospitals, Jnl. of the American Hospital Association v52 n19 p141-142, 144 1 Oct 78.

Descriptors: Ambulatory health care, Ambulatory health services, *Day care services(Health), Health care services, Long term care, *Mental health services, Personal health services, State regions, Texas.

A discussion of the day care program offered for psychiatric patients by the Timberlawn Day Hospital in Dallas, Tex., is provided. The day hospital is part of the Department of Partial Hospitalization of Timberlawn Psychiatric Hospital, Inc., a comprehensive, private psychiatric center. Attendance at the day hospital can be on a full-time or part-time basis. Treatment is individualized according to the needs of the patient. The day hospital's main purpose is to allow the patient to maintain himself in the community while participating in a comprehensive, coordinated therapy program. The day program emphasizes shared responsibility with the patient and his family for treatment goals, and encourages families to maintain regular contact with the patient's treatment program so that they can provide support away from the program for treatment goals. The program is also very flexible, allowing the patient to gradually decrease his participation as his symptoms decrease. An outline of a typical day is provided. The goals of the day hospital are to: relieve the patient's immediate stress and symptoms, interrupt self-defeating and nonfunctional behavior, assist the patient in gaining awareness of his needs, and monitor his practice of new behavior.

HRP-0027955/4GA Not Available NTIS
New Britain General Hospital, CT.
Creativity and Hospital Costs -- It's All in the Approach.
Gwynn X. Lamont. 1978, 5p
Pub. in Hospitals, Jnl. of the American Hospital Association v52 n19 p93-94, 98, 102, 104 1 Oct 78.

Descriptors: Administration, Connecticut, Financial management, *Health care delivery organizations, Health planning, Hospital administration, Methodology, State regions, Strategy.

A discussion of the cost containment program utilized by the New Britain General Hospital is provided. At New Britain, costs are considered before a decision is made to fund an undertaking. The budget development process is the first management technique-cost containment relationship. An outline of the budget process is provided. The second management technique-cost containment relationship concerns the type of surgical case booking that is used. The third management technique-cost containment relationship concerns the use of cyclical personnel schedules. These are hour and day of the week assignments, rotating among departmental employees over a period of time. The advantages of this type of schedule are noted. The fourth management technique-cost containment relationship deals with inventory control and materials management. The steps involved in this process are: 1) to establish a centralized inventory control for the nonmedically oriented items; 2) to establish an individual department inventory for medically oriented items; and 3) to standardize inventory items and adopt economical purchasing practices. A discussion of long-range versus short-range planning is provided.

HRP-0027956/2GA Not Available NTIS
Iowa Univ., Iowa City. Coll. of Medicine.
Current Status of Services for the Handicapped Child.
John C. MacQueen. 1978, 7p
Pub. in Jnl. of Iowa Medical Society v68 n10 p358-364 Oct 78.

Descriptors: *Child health services, *Health care delivery systems, Health care delivery, Health care services, Health care teams, Health legislation, Health occupations, Law(Jurisprudence), Personal health services, Physicians.

The implications of changes in the delivery of health services to handicapped children are examined. There was no public system to provide community services for physically disabled and/or educationally handicapped children until the early 1960's. The Report of the President's Panel on Mental Retardation is said to have been instrumental in bringing about changes in the care of handicapped children. Recommendations made by the panel are outlined. A discussion of the Education for All Handicapped Act of 1975, which declares that all children will have free access to a free and appropriate educational experience, is provided. The act also requires the school system to conduct a 'child find' program to identify children between the ages of 0 and 5 who may have learning and learning-related problems. It is noted that children with significant handicaps often require the care of a team of trained personnel, of which the physician is an important member. The concept of team care is explored. The responsibilities of the physician, the county medical society, and the medical community as a whole to handicapped children are delineated.

HRP-0027958/8GA Not Available NTIS
Pennsylvania State Univ., University Park. Cooperative Extension Service.
Educational Needs as Perceived by Community Health Decision Makers.
Carol C. Riddick, Sam M. Cordes, and Charles O. Crawford. 1978, 5p
Pub. in Public Health Reports v93 n5 p474-478 Sep-Oct 78.

Descriptors: Data acquisition, Data collection, Data processing systems, Design, Health care delivery, Health care, *Health manpower education, Methodology, Pennsylvania, Questionnaires, Research, State regions, Surveys.

A discussion is presented of a study undertaken to identify specific informational and educational needs of health care decisionmakers. The study was directed at determining: 1) the specific informational and educational needs perceived as most important by community health decisionmakers; 2) the difference in the viewpoints of health care providers/decisionmakers and health care consumers in perceptions of informational and educational needs; and 3) variations in perception of needs according to the nature of the decisionmakers' community and the community's supply of health care resources. An explanation of the methodology utilized in the study is provided. A

questionnaire listing 18 potential topics for educational programing was mailed to each member of the health councils in three Pennsylvania counties. The 18 topics were divided into general concepts and background information and special topics and current issues. The list of topics for educational programing was said to have been sufficiently comprehensive to include the major educational needs perceived by the respondents. A list of the topics considered most important by respondents is included. Tables highlight the data.

HRP-0027969/5GA Not Available NTIS
National Inst. of Mental Health, Rockville, MD. Office of Program Development and Analysis.
Effects of National Health Insurance on Canadian Psychiatry -- The Ontario Experience.
Benjamin Liptzin. 1978, 5p
Pub. in American Jnl. of Psychiatry v134 n3 p248-252 Mar 77.

Descriptors: Child health services, Financing, Foreign countries, Health care costs, Health care delivery, Health care services, Health care, Health insurance, Health occupations, Health resources, Mental health services, *National health insurance, Personal health services, Prepaid health care, Public health insurance, Quality assurance, United States.

Ontario's experience with psychiatry under a national health insurance system offers some lessons for the United States. This paper, which is based in part on interviews with key representatives of the Ontario system, addresses the provision of mental health benefits, utilization and cost questions, and such issues as quality assurance and confidentiality. Insurance reimbursement is set at 90 percent of the fees listed in the Ontario Medical Association schedule of fees. Compared to the U.S. Government, Canadian Provinces play a much more direct role in cost containment efforts. The Province has considerable leverage in controlling hospitals since it is the source of all funding for hospital operations and most funding for new hospital construction. One cost-saving approach has been the elimination of unnecessary hospital beds. At present, the major avenues for limiting expenditures for physicians' services are the fee schedules and physician profiles. Concern over inadequate mental health resources for children has resulted in a significant expansion of services since 1971. It is felt that the Canadians have been successful in dealing with the financing questions of national health insurance without making major changes in their health delivery system.

HRP-0028006/5GA PC **A04**/MF **A01**
Missouri State Dept. of Social Services, Jefferson City. State Health Planning and Development Agency.
Health Care Expenditures in Missouri, 1966-1976.
Lanis L. Hicks. Jul 78, 54p

Descriptors: Communities, Data, Demography, Financing, *Health care costs, Health care delivery, Health care facilities, Health care indexes, Health care services, Health occupations, Health resources, Health statistics, Indexes(Ratios), *Missouri, *Personal health services, Physicians.

A discussion of health care expenditures in Missouri from 1966 through 1976 is provided. In 1966, the State spent $829 million for personal health care services, while in 1976 it spent $2,085 million. Per capita expenditures for personal health care services are said to have increased by 219 percent from 1966 to 1976. In 1966, public sources accounted for $28.45 per capita for personal health expenditures. This amount had risen to $170 per person in 1976. In 1966, consumers directly financed 60 percent of personal health care expenditures. By 1976, consumers directly financed only 41.2 percent of personal health care expenditures. Third-party payments increased by 359 percent during this period. In 1966, per capita expenditures for hospital care were $74.76, while in 1976, they were $284.39. In 1966, hospital care expenditures represented 41 percent of total health care spending. In 1976, they represented 48.5 percent. Spending for physician services increased by 237 percent, while spending for dental services increased by 163 percent. Spending for other professional health care services increased by 109 percent. Tables highlight the data presented.

HRP-0028018/0GA Not Available NTIS
Veterans Administration Hospital, Brentwood, CA.
Acceptance of Operations Research/Systems Analysis in the Health Care Field.
Amar J. Singh, and Philip R. May. 1977, 6p
Pub. in Interfaces v7 n4 p79-84 Aug 77.

Descriptors: Administration, California, Data analysis, Data processing systems, Data processing, *Health care delivery organizations, Health care delivery, Health care, Mathematical models, Methodology, *Operations research, Research, State regions, *Systems analysis.

A discussion of attempts to incorporate operations research (OR)/systems analysis techniques in the operation and administration of a health care facility is presented. The rationale used to develop an OR department at the Brentwood, Calif., Veterans' Hospital is outlined. Two studies undertaken by the OR department are described. The staff of one ward wanted to create a satellite clinic in a community where numerous patients lived. The chief of staff, who had played the primary role in starting the OR group, assigned an OR analyst and an experienced nurse to help in setting up the clinic. Four project modules were undertaken to complete the study: a systems analysis study; workload estimates; cost analysis; and planning of the outpatient clinic. By assigning an OR analyst to work with the staff, top management provided its support in conducting the OR study. Senior staff, both clinical and administrative, participated in the process. Participation is said to facilitate success. The next step (and second study) was to develop rational methods for staff allocation. The OR analyst suggested the use of linear programing. The results are said to have been controversial. The allocation methods were thus not used by the staff. Reasons for the failure of the second study are explored.

HRP-0028019/8GA Not Available NTIS
Kanto Chuo Hospital, Tokyo (Japan).
Health Care Checks in Japan.
R. Kashida. 1976, 7p
Pub. in Medical Informatics v1 n4 p285-291 1976.

Descriptors: Ambulatory health services, Foreign countries, Health care facilities, Health care services, Health resources, *Health screening, Medical care, Medical services, Personal health services.

There are three types of health checks in Japan. The first, called dry dock, requires the patient to spend 2 or more days in the hospital. In a survey taken in 1972, the Ministry of Welfare reported that there were 1,900 dry dock schemes in existence. The second type of health care check is conducted in an automated multiphasic health testing and service (AMHTS) center. There are 50 such centers throughout Japan. For the most part, they are located in large cities. They provide health screening services and give guidance in health administration and education. AMHTS is said to be the best institution of health care in Japan. AMHTS is considered better than dry dock because it permits better quality control of tests. Sophisticated techniques such as automated questionnaires, laboratory automation and computing facilities are included in AMHTS systems. The third health care checks are individual health checks in outpatient departments. Maps illustrate the distribution of AMHTS and dry dock in Japan.

HRP-0028026/3GA Not Available NTIS
State Univ. of New York Downstate Medical Center, Brooklyn.
Need for Primary Care as Seen in the Perapective of Public Health.
Duncan W. Clark. 1976, 7p
Pub. in Bulletin of the New York Academy of Medicine v53 n1 p18-24 Jan-Feb 77.

Descriptors: Communities, Demography, Distribution, Distributions, Health care services, Health manpower, Health occupations, Health resources, Medical services, Nurses, Personal health services, Physician assistants, Physician extenders, Physicians, Registered nurses, United States.

This discussion of the need for primary medical care concerns the main providers including general practitioners, general internists, pediatricians, and obstetricians. Much of the public demand for primary care is said to have its origin in problems associated with access, or entry, to medical care. The need for attacking barriers that limit or deny access to primary care is stressed. Part of the public demand for primary care stems from the declining number of general practitioners and the relative fall in the number of physicians in private practice. Influences on the problem of primary care manpower are noted. The problems created by the rising number of foreign medical graduates who are U.S. citizens are explored. One response to the shortage, or maldistribution, of U.S.-trained primary care physicians is the invention of the category of new health professionals. Included in this category are nurse practitioners, child-health associates, physicians' assistants, and others. Continuing changes in the nursing profession are an additional influence on the problem of primary care manpower. The need for a long-term view of short-term remedies is emphasized.

HRP-0028039/6GA Not Available NTIS
Cottonwood Hospital, Murray, UT.
Quality Assurance -- Inpatient Audit Simplified.
Bobbi Beck, and Karen Hardwick. 1978, 4p
Pub. in Hospitals, Jnl. of the American Hospital Association v52 n19 p75-78 1978.

Descriptors: Acute care, Administration, Health care delivery organizations, Health care services, Health care, Health occupations, Hospital administration, Inpatient services, Personal health services, Physicians, *Quality assurance, State regions, Utah.

Although many physicians regard inpatient hospital audits with hostility, Cottonwood Hospital in Murray, Utah, was quite successful in securing the cooperation of physicians in its audits. This was done in part by emphasizing to physicians how the audits could benefit them. An attempt was made to develop a program that would keep physicians informed about audit requirements, procedures, and forms and about the information they would obtain from the audits. Cottonwood tries to audit those procedures that offer promise of improvement or are of interest to the physicians. For instance, the audit of vaginal hysterectomies showed that physicians were prescribing a certain antibiotic that research had shown to be ineffective in destroying the bacteria against which it was being used. Hospitals beginning an audit program must establish criteria in the following broad areas: diagnosis (evidence needed to justify treatment), specific procedures, admission (whether hospitalization or outpatient treatment would be sufficient), discharge status (expected condition of patient after treatment), mortality, length of stay, cost (often varies by physician), and 'others'. All readmissions within a certain period of time after discharge are also audited. To reduce the amount of paper shuffling, Cottonwood has devised a system of punched sort cards that contain all the information from patients' files. Cottonwood also audits its emergency department by telephoning patients after discharge and interviewing them on the quality of care, symptoms, complications, disabilities, and other factors.

HRP-0028045/3GA Not Available NTIS
Massachusetts Dept. of Public Health, Boston.
Adolescent Pregnancy Revisited.
Jonathan E. Fielding. 1978, 4p
Pub. in the New England Jnl. of Medicine v299 n16 p893-896 19 Oct 78.

Descriptors: Age groups, Classifications, Communities, Demography, Fertility, Health education, *Massachusetts, Public health education, Vital statistics.

Adolescent pregnancy in Massachusetts has exhibited a greater decrease than in the nation as a whole. Births to teenagers in that State have declined from 9,922 in 1966 to 7,991 in 1976, an 18.4 percent reduction. It is pointed out that births to teenagers would be more numerous were it not for the greater availability of contraceptives to teenagers and the liberalization of legal abortions. In the United States, one-third of all abortions are performed on girls 17 years of age or younger. Teenage pregnancy has three main problems as-

sociated with it: the increased health risks to the mother; the frequency of low-birth-weight infants; and the pattern of lost educational opportunities, unstable family life, poor employability, and welfare dependence. A discussion of pregnancy prevention techniques is provided. The most frequent strategies suggested to prevent teenage pregnancy are: sex education that begins early in school; availability of contraceptives without parental consent; free contraception and family-planning counseling; and education to enhance parental understanding of teenage sexual activity.

HRP-0028105/5GA Not Available NTIS
Rush-Presbyterian-St. Luke's Medical Center, Chicago, IL.
Transformation of a Hospital Clinic to a Private Office Practice.
Bruce C. Campbell, and Edsel K. Hudson. 1978, 8p
Pub. in Jnl. of Ambulatory Care Management v1 n3 p1-8 Jul 78.

Descriptors: Accessibility, Acute care, Administration, Ambulatory health services, Documents, Health care costs, *Health care delivery organizations, Health care services, Health care, Hospital administration, Illinois, Information systems, Inpatient care, Inpatient services, Methodology, Patients, Personal health services, Sources, State regions.

This article discusses the replacement of the Rush-Presbyterian-St. Luke's Medical Center clinics in Chicago, Ill., with a variety of private practices; particular attention is given to the single specialty medicine practice (the Medical Care Group). A comparison of the first year of operation of the Medical Care Group and the former Medicine Clinic was undertaken. The study attempted to discover whether Medicine Clinic patients would continue to use Rush providers. It is noted that 71 percent of the sample of 250 former Medicine Clinic patients continued to use Rush providers. A comparison of the cost of operating the Medicine Clinic and the Medical Care Group is provided. The transformation is said to have resulted in several positive experiences. The Medical Care Group was less expensive to operate on a cost-per-visit basis than the Health Center Medicine Clinic. The main cost difference appeared in the allocated costs, which were less in the private practice. The Medical Care Group, it is suggested, may be able to operate more efficiently because it is responsible for paying its own way. The group also has management control over all personnel and expenses. Suggested readings are included.

HRP-0028106/3GA Not Available NTIS
Roxbury Dental and Medical Group, MA.
Changing an Urban Community Health Center -- The Consultant as Executive Director.
Walter L. Isaacs. 1978, 12p
Pub. in Jnl. of Ambulatory Care Management v1 n3 p53-64 Jul 78.

Descriptors: Administration, Ambulatory health services, Health care delivery organizations, Health care services, Hospital administrators, Long term care administrators, Massachusetts, Personal health services, State regions, *Urban health services.

A discussion is provided of the use of a consultant as an executive director in the urban community health center. The Roxbury Dental and Medical Group, Inc. in Boston, Mass., hired consultants to help management deal with the rapid growth of the health care center. The consultants conducted interviews with about 80 percent of the staff and 50 percent of the board of trustees. Specific strategies were developed for dealing with the priority issues, which included managing the patient load, communication, staff relationships, career growth, role definition/orientation and board functioning. A discussion of each is provided. When one of the consultants was appointed executive director, biweekly department head meetings were increased to weekly meetings and general staff meetings were held once a month. The picture for the executive director is said to have changed drastically. The consultant had to be very clear and specific so that tasks could be completed within the allotted time, while the executive director had the freedom to let tasks take more time to be completed. The advantages and disadvantages of the consultant are noted.

HRP-0028143/6GA Not Available NTIS
American Univ., Washington, DC.
Answering the Challenges to Effective Health Care Administration.
Jerry L. Weaver. 1978, 17p
Pub. in Jnl. of Health and Human Resources Administration v1 n2 p231-247 Nov 78.

Descriptors: Administration, Economics, *Health care delivery organizations, Health care, Health economics, Hospital administrators, Long term care administrators.

This article stresses that the primary responsibility of the professional health care administrator is to obtain and allocate vital resources. The general categories into which the resources fall are economic goods and services, information, status, legitimacy, and coercion. Money is said to be the item which causes health care administrators the most difficulty. Drugs, medicine, food, and blood are said to be economic goods. Diagnostic and curative procedures provided by the health care facility are classified as economic services. A very large percentage of the monetary expenditures of health care institutions is spent on salaries. Explanations are offered. The role of information in the operation of health care facilities is examined. Legitimacy, which is considered a valuable resource, is discussed. Coercion is viewed as a resource to the health care administrator when he is confronted by a would-be trading partner who is reluctant or unwilling to make an exchange. It is pointed out that the administrator's day-to-day work may be seen as establishing contacts with resource holders and developing ongoing exchanges with them.

HRP-0028147/7GA Not Available NTIS
Case Western Reserve Univ., Cleveland, OH.
Work Settings and Job Satisfaction -- A Study of Primary Care Physicians and Paramedical Personnel.
Naomi Breslau, Alvin H. Novack, and Gerrit Wolf. 1978, 13p
Pub. in Medical Care v16 n10 p850-862 Oct 78.

Descriptors: Attitudes, Health care costs, Health care delivery, Health care, Health manpower, Health occupations, Income, Measurement, Medical personnel, Methodology, *Physicians, Research, Surveys.

Physicians' satisfaction with their work activity, coworkers, and income appears to be lower in modern organizational settings than in traditional solo and small practices. That is the major conclusion of a study based on interviews of 70 primary care teams, each comprising single physicians and the paramedical personnel who work with them. It is noted that of two-way analyses of variance using work settings and occupational level as independent variables showed consistent effects of setting on job satisfaction. However, the multiple regression analysis suggested that the variety and complexity of work is only weakly related to satisfaction with work and thus should not be regarded as the major link between satisfaction with work and practice setting. In modern settings, shorter patient visits were associated with greater perceived efficiency, which was in turn related to greater work satisfaction, but in traditional settings, while shorter visits were likewise related to greater efficiency, this efficiency tended to be related to lower work satisfaction. Physicians in the latter setting appear to prefer long visits in which they alone perform most of the tasks, but view this mode of patient care as incompatible with efficient performance.

HRP-0028163/4GA Not Available NTIS
Golden Valley Health Center, Minneapolis, MN.
Approaches to Childbirth.
Mary C. Doyle. 1978, 7p
Pub. in Family and Community Health v1 n3 p57-63 1978.

Descriptors: Acute care, Health care services, Health education, Home health care services, Home nursing, Inpatient services, Medical services, Minnesota, Personal health services, Public health education, State regions.

A discussion of past and present approaches to childbirth is provided. It is noted that before the 1900's, most births took place at home. With the advancement of medicine, more births took place in hospitals. This trend resulted in reduced maternal and infant death rates. Hospital delivery rooms, however, were like operating rooms: functional but impersonal. Moreover, childbirth was treated as an illness. Changing knowledge, attitudes, and expectations associated with childbirth in 1978 are explored. Childbirth options are examined. Home birth is said to be one of the more controversial options. European data indicate that home birth has a higher risk than hospital delivery. The advantages and disadvantages of home birth are discussed. A birth center is said to offer many of the advantages of home birth while providing emergency equipment and assistance not available at home. Birthing rooms (combined labor-delivery-recovery rooms in hospitals) are said to be the fastest growing choice. A case study of birthing rooms at Golden Valley Health Center in Minnesota is provided. It is suggested that couples interested in childbirth options contact their local childbirth education group for educational material on birth approaches.

HRP-0028300/2GA PC **A06**/MF **A01**
Medicaid Bureau, Washington, DC.
Data on the Medicaid Program -- Eligibility, Services, Expenditures -- Fiscal Years 1966-78.
1978, 105p
Revised edition.

Descriptors: Communities, Data, Demography, Financing, Health care delivery, Health care indexes, Health care services, Health insurance, Health resources, *Health statistics, Personal health services, Prepaid health care, Public health insurance, Public health services.

Data on the Medicaid program for the years 1966-78 are presented. The services covered under the State Medicaid programs are reported, including the required services, optional services, and limitations in the scope of coverage; cost-sharing requirements; changes in State Medicaid programs; persons covered under Medicaid; and methods of reimbursement for selected Medicaid services. The basic services required under a State's Medicaid program are: inpatient hospital care; outpatient hospital care and rural health clinic services; physician and family planning services; laboratory and X-ray services; skilled nursing facility services and home health services; and early and periodic screening, diagnosis and treatment for individuals under the age of 21. A discussion of optional services is included. The relationship of Medicare and Medicaid is explored. It is pointed out that Medicaid does not provide medical assistance to all poor people. Low income is said to be only one test of eligibility. Resources are also considered. It is noted that an individual must belong to one of the groups designated for welfare eligibility in order to be covered.

HRP-0028302/8GA PC **A03**/MF **A01**
California Univ., Berkeley. Maternal and Child Health Program.
Studies in Adolescent Health -- Research to Improve Health Services for Mothers and Children.
1977, 37p HSA-77-5701
Grant PHS-MC-R-060208

Descriptors: *Child health services, *Health care delivery, Health care services, Personal health services, Projects, Research and development.

The research projects reported in this booklet were funded by DHEW to improve the operation, functioning, and effectiveness of health services for mothers and children and for crippled children. Ten projects are summarized. They address the ambulatory care patterns of urban adolescents, selected parameters of school achievement among urban adolescents, evaluation of a self-administered health questionnaire in a private pediatric practice, and the progression of allergies in adolescents. Other subjects considered are evaluation of stress (hypertension) examinations of adolescents, a followup study at adolescence of multiracial youths in Hawaii, guidelines for self-evaluation of programs which serve adolescent parents, comprehensive service programs for school-age

pregnant girls, research use and information sharing regarding school-age parents, and the biological father identified by black primiparous adolescents. The projects have produced a number of findings that have implications for local and State maternal and child health programs, local, State, and Federal health agencies, and individual workers.

HRP-0028317/6GA Not Available NTIS
Medicolegal Aspects of Hospital Records. Second Edition.
Emanuel Hayt. 1977, 519p
Available from Physicians' Record Co., 2000 S. Ridgeland Ave., Berwyn, IL 60402.

Descriptors: Administration, Data processing, Health care delivery organizations, Health care, Health legislation, Law(Jurisprudence), Legislation, *Medical records, Methodology, Regulations.

This discussion of the medicolegal aspects of hospital records notes that the medical record is not only a profile of the patient but a picture of the care rendered to that patient and a tool to determine the quality of the care received. It is pointed out that, although the Joint Commission on Accreditation of Hospitals prescribes the contents of the medical record and a hospital medical records committee reviews the record, the medical records administrator is the person ultimately responsible for the record's completeness. Medicolegal problems resulting from the use of information in the medical record are explored and court cases are cited. Joint Commission on Accreditation of Hospitals standards for medical records are discussed and a description of computerized medical records is provided. The responsibilities of the governing body and medical staff are outlined. Information concerning transplantations, sterilizations, and abortions is supplied. Definitions of legal terms are included, as are consent forms for various types of clinical services. Each form is said to have legal significance, not only to protect the hospital against legal complications but also to prevent the patient from having unauthorized clinical procedures.

HRP-0028395/2GA PC **A05**/MF **A01**
Georgetown Univ., Washington, DC. Health Policy Research Group.
Private Foundation Health Expenditures -- A Survey Analysis.
John Craig, Megan McDonald, Betty Dooley, and David Parker. Oct 78, 81p

Descriptors: Acquisition, Financial management, Financing, Funds, Health care delivery organizations, Health related organizations, Health resources, Methodology, Nonprofit, *Private funds, Private institutions, Private organizations.

Private foundation activities affecting the health care system are evaluated. A classification scheme was devised to categorize health expenditures by a stratified random sample of private foundations. This scheme focused on health delivery system components and expenditures by component according to specific types of activities involved. It also included the assignment of investment activities in basic components into one of three categories: research or evaluation; experiments, demonstrations, or initiatives; and investments aimed at maintaining or expanding the health delivery system. It was found that private foundation outlays account for less than 1 percent of all national health expenditures and for about 11 percent of all philanthropic health expenditures. Private foundation activities concentrate on long-range investments, as opposed to the financing of health care services. About one-third of private foundation investments are for the construction of buildings and the purchase of equipment. The role of private foundations is discussed in relation to the financing of health care services, health facility construction, biomedical research, financing mechanisms, innovative service delivery programs, and health manpower training. Supporting data and references are provided. Technical appendixes contain additional information on the survey of private foundations, the expenditure classification system, and the precision of estimates made in the survey.

HRP-0028450/5GA Not Available NTIS
Society for Health and Human Values, Philadelphia, PA.
Changing Roles and Education of Health Care Personnel Worldwide in View of the Increase of Basic Health Services.
Ronald W. McNeur. 1978, 280p
Papers from a Consultation sponsored by the Society for Health and Human Values at the Rockefeller Foundation Study and Conference Center, Villa Serbelloni, Bellagio, Italy, May 2-7, 1977.
Available from the Society for Health and Human Values, 1100 Witherspoon Building, Philadelphia, PA 19107.

Descriptors: Foreign countries, *Health manpower education, Health manpower, Health occupations, Health resources, Nurses, Physicians.

A discussion of the changing roles and education requirements for health care professionals is presented. A perspective on the health care field is provided and some questions associated with the roles and education of health personnel are explored. It is suggested that people must become actively involved in accepting greater responsibility for aspects of their own health care. Such involvement would result in better education in health, improved patterns for local delivery of basic primary care, and decreased demands for scarce, highly trained personnel and expensive facilities. Reports from several countries about what is actually taking place in basic health services are presented, and changes relating to role and educational questions are examined. Changes in the roles and education of physicians and nurses are identified as well as changes in public expectations and responsibilities. Common problems are listed. It is pointed out that the greatest disease problems presently faced are those which cause diarrhea in children, as well as other types of infections in all age groups. It is suggested that the recognition of health and health maintenance should receive greater emphasis than the cure of disease.

HRP-0028453/9GA Not Available NTIS
Indiana Univ. of Pennsylvania.
Community Health Today.
Stephen E. Gray. 1978, 502p
Available from Macmillan Publishing Co., Inc., 866 Third Ave., New York, NY 10022.

Descriptors: Communities, Death, Demography, Environmental health, Gerontology, Health care delivery, Health care services, Health care, Personal health services, Psychology, Public health services, Public health, Research, Thanatology.

A discussion of community health is provided. Organizational aspects of community health, which deal with health professionals, hospitals, public agencies, and other facets of health care delivery are explored. Physical aspects of community health are examined, including diseases that are transmitted and diseases that strike the elderly. Lack of safety is discussed, as are other physical deterrents to a long and enjoyable life. The drug, alcohol, and mental health problems facing society are enumerated. Environmental aspects of community health are delineated, including air and water quality, waste, and population control. Special aspects of community health are also considered. Problems peculiar to the senior citizen, to the infant and to the mother are outlined. The subjects of death and dying are examined. Five steps experienced by many dying individuals are noted and discussed: denial and isolation; anger; bargaining; depression; acceptance; and hope. It is pointed out that not all patients experience the five stages, nor does everyone experience them in the same way. The steps outline the emotional turmoil faced by the dying individual. The material presented is intended for health professionals and for students planning to enter the health field.

HRP-0028456/2GA PC **A05**/MF **A01**
Department of Health, Education, and Welfare, Washington, DC.
Lead Agency Memorandum on a National Health Program.
3 Apr 78, 80p

Descriptors: Economics, Financing, Health care costs, Health care delivery, Health care services, Health care, Health economics, Health insurance, Health occupations, Health related organizations, Health resources, Medical care, Medical services, *National health insurance, Organization theory, Personal health services, Prepaid health care, Public health insurance, United States.

Principles to guide in funding and administering a national health insurance (NHI) program are examined in this DHEW memorandum. The health industry is the third largest business in the United States, and hospital costs are increasing at a rate 2.5 times the consumer price index. Health programs of the Federal Government fall into four categories: direct care programs for special populations, programs to pay for medical care, programs designed to regulate the supply of medical resources or improve the quality of services, and programs to fund medical research activities and insure the safety of drugs and medical devices. Revenue sources that pay for the nation's health care bills are patients, private insurers, and Government. Problems in the health care system relate to access, threat of financial ruin, cost, responsiveness of the system, and health status. A broad NHI program is recommended to deal with the financing of medical services, to improve health status, to assure that adequate medical services are available in all communities, and to promote efficiency and effectiveness in the health industry. Four approaches to funding and administering NHI are outlined: (1) consumer choice health plans; (2) target plans; (3) public corporations; and (4) publicly guaranteed plans. The impact of these approaches on the economy and on health services and facilities is analyzed. Additional information on the approaches and cost-estimating assumptions are contained in attachments.

HRP-0028491/9GA Not Available NTIS
Southern Illinois Univ. School of Medicine, Springfield.
Hospice -- Development and Administration.
Glen W. Davidson. 1978, 232p
Available from Hemisphere Publishing Corp., Global Bldg., 1025 Vermont Ave., N.W., Washington, DC 20005.

Descriptors: Accessibility, Administration, Documents, Foreign countries, Health care delivery organizations, Health care services, Health care, Health legislation, Health manpower education, Health occupations, Information systems, Law(Jurisprudence), Legislation, Measurement, Methodology, Personal health services, Personnel management, Quality assurance, Regulations, Social services, Sources, *Terminal care, United States.

This book, which is thought to represent the first attempt to bring together in one volume a report on the hospice movement in North America, is concerned with what has occurred and what is being planned for improved institutional care of the terminally ill. The opening material describes six hospice or palliative care programs which attempt to deal with the needs of the patients, their families, and the staff who care for them with a renewed sense of compassion similar to that achieved at St. Christopher's Hospice in England. Problems associated with caring for the terminally ill are the subject of the essays which follow. Attention is given to a different approach to the educational process from that which is taken in many programs for nursing staff members; staff stress and motivation; patient stress from the viewpoint of thwarted creativity; and evaluation of quality of care. The remaining material is devoted to basic issues in hospice care, including 'spiritual', ethical, and legal aspects; an annotated bibliography; and a Directory of Hospice Programs in the United States. The still-incomplete directory contains brief descriptions (organized by State) of each program.

HRP-0028551/0GA PC **A12**/MF **A01**
Medicaid Bureau, Washington, DC.
Conference Proceedings of Management of State Medicaid Drug Programs Held at Albuquerque, New Mexico on October 17-19, 1977.
1977, 255p

Descriptors: Arkansas, Financing, Health care delivery, Health care technology, Health care, Health insurance, Health occupations, Health resources, Iowa, Maryland, Prepaid health care, Public health

insurance, Quality assurance, Regions(United States), Texas, Therapy.

This conference was held in 1977 to exchange ideas and information on Medicaid drug programs and to provide an opportunity for State personnel to discuss management procedures and utilization controls they employ to administer their programs effectively. Participating in the conference were State Medicaid drug program directors and their pharmacy consultants, Federal personnel representing central and regional offices of the Medicaid program, and representatives from the private sector (drug manufacturers and consulting firms). The conference format included a number of open sessions in which Federal and State participants dealt with reimbursement and management problems, three workshops in which State personnel discussed control mechanisms, and the presentation of preliminary results from a study concerned with the impact of inappropriate ambulatory drug therapy on hospitalization. The management of Medicaid drug programs in Maryland, Arkansas, Texas, and Iowa was detailed. A conference agenda and a list of participants are included. The study of the impact of inappropriate ambulatory drug therapy on hospitalization is contained in an appendix.

HRP-0028626/0GA PC **A03**/MF **A01**
Health Care Financing Administration, Washington DC. Office of Health Standards and Quality.
Suggestions for Peer Review by Health Care Practitioners Other Than Physicians in PSRO Short-Stay Hospital Review, TA9.
25 Jan 77, 26p
See also HRP-0901211 -- HRP-0901225, HRP-0028627 -- HRP-0028628.

Descriptors: Dentists, Health care, Health manpower, Health occupations, Health related organizations, Health resources, Measurement, Methodology, Nurses, *Peer review, Professional personnel, *Professional standards review organizations, PSRO(Professional standards review organizations), Quality assurance, Reviews.

Some suggestions are offered for professional standards review organizations (PSRO's) to use to establish peer review by health care practitioners who are not physicians but who work in short-stay hospitals. Background information is provided concerning health care practitioners (dentists, oral surgeons, clinical psychologists, podiatrists) who have hospital admitting privileges. Additional information is supplied concerning those health care practitioners who work under direct physician supervision (nurses, medical social workers, dietitians, physical therapists, speech and hearing specialists, pharmacists, respiratory therapists, occupational therapists, radiological technologists, and laboratory workers). One possible structure is described for health practitioner activity in a State with three or more PSRO's. A structure is also described for health practitioner activity in a State with less than three PSRO's. It is suggested that these practitioners should be involved in hospital review activities through the same mechanisms as those established for physicians. They should also be subject to the same review restrictions. Diagrams illustrate the information presented.

HRP-0028628/6GA PC **A03**/MF **A01**
InterQual, Inc., Chicago, IL.
Developing and Using Profiles -- A Primer for PSRO Physicians, TA17.
19 Oct 78, 45p
See also HRP-0901211 -- HRP-0901225, HRP-0028626 -- HRP-0028627.

Descriptors: Health care, Health occupations, Health related organizations, Health resources, Measurement, Methodology, Peer review, *Physicians, *Professional standards review organizations, PSRO(Professional standards review organizations), Quality assurance, Reviews.

Material is presented to help professional standards review organizations (PSRO's) provide PSRO physicians with a better understanding of the concepts of profiles and profile analysis. If the PSRO physicians can understand profiles and profiles analysis, they should also be capable of analyzing the impact of PSRO activities on the quality of care and use of services in the PSRO area. The uses of PSRO profiles (performance monitoring, examination of other issues, and establishing review priorities) are delineated. Profiles can illustrate trends, indicate problem areas, provide an objective basis for decisionmaking and account for expected variation. The limitations of profiles are noted, and it is pointed out that the limitations can be overcome if analysis occurs as close as possible to the point of service. The characteristics of a useful PSRO profile are noted and the components and types of profiles are listed. Definitions of the groups and subgroups included in the profile are provided. The data available from the profiles are considered and the new information that comes from the profiles is described. Examples are provided. Tables highlight the information presented.

HRP-0028686/4GA PC **A03**/MF **A01**
California Dept. of Health Services, Sacramento. Office of Planning and Program Analysis.
Benefits and Costs of the Family Planning Program.
1 Dec 77, 45p

Descriptors: *California, Classifications, Communities, Demography, *Family planning, Females, Health care costs, Health care requirements, Health care services, Health care, Males, Measurement, Methodology, Personal health services, Sex groups, Social services.

A discussion is provided of the benefits and costs of family planning services in California. A review of the budgetary needs of the Family Planning Program is presented, and the characteristics of the program are examined. The Family Planning Office requested an additional $2.1 million to provide contraceptive services in fiscal year 1978-79. Since the current annual average cost per client is $50, the increased funding would allow the program to serve an additional 42,000 people. The methodology employed by the Office of Family Planning to estimate the unmet need is delineated. Data on the number of women needing family planning services, the number of women currently being served by the program, and the difference between the two figures were considered. It is estimated that there are approximately 622,000 eligible women whose needs have not yet been met. The results of interviews conducted with family planning providers in three counties are included. It is recommended that the budget increase sought by the Family Planning Program be approved. It is suggested that a plan be formulated so that family planning services can be extended to those who are not served. Tables highlight the data.

HRP-0028700/3GA PC **A02**/MF **A01**
Korea Development Inst., Seoul.
Can Health Planning Be a Viable Component of the Development Process -- The Korean Experience.
Hak Chung Choo, James R. Jeffers, and Michael J. Reardon. 18 Oct 76, 20p
Presented at the American Public Health Association Annual Meeting, Miami Beach, FL, October 18, 1976.

Descriptors: Communities, Demography, Economic conditions, Economics, Foreign countries, Guidelines, Health care, Health economics, *Health planning, Methodology, Policies.

Economic development in connection with health planning in Korea is explored. The health planning process in Korea, the establishment of target objectives, and criteria used to appraise programs are influenced by economic considerations to a greater extent than is usually the case in health planning. Constitutionally, the Ministry of Health and Social Affairs is responsible for national health policy formulation. There are major organizational problems, however, among Korean ministries that represent obstacles to the successful formulation and implementation of national health policies. The 5-year development plan is viewed as a segment of continuous effort toward modernization and development. This plan places special emphasis on the health sector. Guidelines for the plan's preparation specify that the following be given particular consideration in health sector plan development: (1) prepare and implement a comprehensive national health plan; (2) expand preventive medical care through improving living conditions and the environment; (3) establish a low-cost health delivery system; (4) reduce regional disparities in the availability of medical resources; and (5) devise effective control of all types of pollution and antipollution measures. Dynamic aspects of the planning mechanism and process are discussed, and salient features of Korea's economy and health sector are identified.

HRP-0900035/7GA PC **A08**/MF **A01**
Information and Communication Applications, Inc., Rockville, MD.
Approach Toward Development of Allied Health Employment Matrices. Part I. Presentation of Project Methodology.
Final rept.
1977, 155p
Contract PHS-HRA-231-75-0018
See also Part II, HRP-0900036, Part III, HRP-0900037.

Descriptors: Accessibility, Data analysis, Data processing systems, Data processing, Data, Health care, Health manpower, Health occupations, Health resources, Methodology, Sources.

A discussion of national employment predictions for selected allied health occupations, based on secondary data sources, is presented. Each step of the overall project methodology is discussed and the resolutions of many diverse issues, e.g., occupational definitions and titles, location of published sources of data, identification of reliable and valid sources of data through content and technical screening, classifications of employment locations and definitions, and bibliographic generation and development of an effective computer system are explained. The time span of the project was 2 years. Statistical techniques employed during the project's estimation phase are outlined. It is pointed out that one of the most important requirements for health care planning is the determination of the numbers of people employed in or being trained for any health-related occupation. Adequate staffing depends on the available number of trained health personnel and the number of existing vacancies for all types of health occupations. A glossary of terms is included.

HRP-0900121/5GA PC **A06**/MF **A01**
Florida Univ., Gainesville. J. Hillis Miller Health Center.
Development of Design and Operational Guidelines for Optimum Manpower in Health Maintenance Organizations and Prepaid Group Practices (HMO/PGP) Settings. Volume II. Management Guide.
May 77, 116p

Descriptors: Administration, Data analysis, Data processing systems, Data processing, Forecasting, Health care delivery organizations, Health care requirements, Health care, *Health maintenance organizations, *Health manpower, Health occupations, Health planning, HMO(Health maintenance organizations), Manpower requirements, Mathematical models, Medical group practice, Medical personnel, Medical practice, Methodology, Models, Personnel management, Systems analysis, Theories.

The development and capabilities of a set of mathematical models intended to aid in the choice of optimum staffing patterns for health maintenance organizations (HMO's) and prepaid group practices (PGP's) are described. It is pointed out that the models are general enough to be applied in a variety of outpatient medical settings as well as in other forms of group practice. They may also be used to develop manpower requirements projections in feasibility studies or to assess operational health care delivery organizations' staffing plans. A description of the characteristics assumed for HMO's is provided. An overview of the models' capabilities is given, along with a description of the input requirements, and the outputs generated. The limitations of the models are discussed and the costs of using the models are examined. The material is intended for management personnel, but is presented in sufficient detail so that computer programmers and other specialists can understand the basic functional relationships within the models and the associated computer programs.

HRP-0900262/7GA PC **A15**/MF **A01**
Bureau of Health Manpower, Hyattsville, MD. Program Management Information Systems Section.
Health Professions Schools -- Selected Enrollment Data 1970-71/1981-82.
1978, 336p

Descriptors: Dentists, Forecasting, Health care, Health manpower education, *Health manpower, Health related organizations, Health resources, Institutions, Measurement, Medical education, Medical personnel, Methodology, Physicians, Professional personnel, Schools, Universities.

Statistics on enrollment in schools of medicine, optometry, pharmacy, podiatry, osteopathy, dentistry, and veterinary medicine for the period 1970-71 through 1981-82 are presented by the Bureau of Health Manpower's Planning, Evaluation, and Legislation Branch. The data came from health professions capitation grant applications or directly from schools. The information is shown by discipline, with schools listed alphabetically by State. Summary enrollment data are provided by discipline for each DHEW region. The projected overall number of graduates for the period is also included. One figure with graphs of first-year enrollments versus graduates for all schools of medicine, and a map of the DHEW regional boundaries and headquarters are furnished.

HRP-0900582/8GA PC **A05**/MF **A01**
Vector Research, Inc., Ann Arbor, MI.
Impact of Health System Changes on the Nation's Requirements for Registered Nurses in 1985.
Jessie M. Scott. Jan 78, 76p
Contract NO1-NU-4-4122
Update of 1976 Edition, HRP-0018706.

Descriptors: Financing, Health care delivery, Health care services, Health insurance, Health maintenance organizations, Health occupations, Health related organizations, Health resources, HMO(Health maintenance organizations), National health insurance, *Nurses, Nursing services, Personal health services, Prepaid health care, Private institutions, Private organizations, Public health insurance.

The impact of three anticipated changes in the health care system on the future requirements for registered nurses is assessed: the introduction of National Health Insurance (NHI), the increased enrollment in health maintenance organizations (HMO's), and the reformulation of nursing roles. An empirical model of the health system was developed, using Bureau of Census predictions concerning the size and composition of the future population, estimates of the amount and type of services used by this population, and predictions of the number of nursing personnel employed to satisfy these future health service demands. Estimates of future requirements in the general absence of each change were then quantitatively compared to estimates incorporating substantial occurrence of the change. It was determined that future growth in HMO enrollments is the least significant factor determining the need for nurses. The most significant potential influences on future nurse requirements are the acceptance of role reformulation, which is partially within the capability of nurses to influence, and the passage of NHI legislation, which is not under direct control of the nursing profession. Figures, tables, and charts present the findings of the study. Appendixes include: the VRI Nurse Requirements Model Results Using the VRI Nurse Requirements Model, and References.

HRP-0901064/6GA PC **A02**/MF **A01**
Cardinal Health Agency, Inc., Lumberton, NC.
Annual Implementation Plan for 1978-79, Health Service Area, 5, North Carolina. Addendum.
Mar 78, 13p
Grant PHS-04-P-000224-1
Sponsored in part by Health Resources Administration, Hyattsville, MD.

Descriptors: Counties, North Carolina, Public health, Requirements, Objectives.

A list of implementors is provided for use in the implementation activities of the Cardinal Health Agency, Inc., regarding health systems development. It is not binding on the project review process as carried out by the evaluation committee of the agency. Short-range objectives and associated implementing entities are identified for health system development activities specified in the annual implementation plan. These activities encompass venereal disease, physician manpower, infant death, immunization, emergency medical services, short-stay hospital services, primary care services, home health services, heart disease, and dental health. Implementing entities include State, county, and local health departments/agencies; medical and health professional associations; community organizations; health care facilities; and health manpower.

HRP-0901154/5GA PC **A17**/MF **A01**
Western Wisconsin Health Systems Agency, Inc., LaCrosse.
Health Systems Plan and Annual Implementation Plan. Health Service Area 5 Wisconsin.
Mar 78, 376p
Sponsored in part by Health Resources Administration, Hyattsville, MD.

Descriptors: Counties, Wisconsin, Public health, Requirements, Objectives.

The introduction discusses the purpose and use of the HSP, the format and content of the plan, the ranking process used to determine priority goals and objectives, plan development procedures, and community involvement in the planning process. The other sections are: Policy Statements; Health Status, which delineates goals, objectives, recommended actions, and resource requirements in relation to characteristics of the population, health indicators (birth and mortality rates, marriages, divorces and separations, suicides, disabilities, and emergencies), and environmental factors; Health System, which specifies goals, objectives, recommended actions, and resource requirements pertinent to the health service system, community health promotion and protection, prevention and detection, diagnosis and treatment, habilitation and rehabilitation, maintenance, personal health care support, and health system enabling services; and Summary. The appendixes contain procedural information on the HSP, a bibliography, a list of the members of the health systems agency, a glossary of terms, statistical data, and comments on the HSP. The annual implementation plan contains an introduction, summary and appendix and outlines HSP objectives within the AIP that concern maintenance, prevention and detection, and diagnosis and treatment.

HRP-0901159/4GA PC **A24**/MF **A01**
Western Colorado Health Systems Agency, Grand Junction.
Health Systems Plan. Health Service Area 3 Colorado.
1978, 554p
Sponsored in part by Health Resources Administration, Hyattsville, MD.

Descriptors: Counties, Colorado, Public health, Requirements, Objectives, Summit County(Colorado).

The health service area served by the Western Colorado Health Systems Agency is described, along with the health status of area residents and the health system. Goals, long-range objectives, and strategies for implementation for the period 1978-83 are then outlined; subsequent material deals with health status components (effects of smoking on health and planning for the promotion of independent living through alternatives to institutionalization) and the health system components. The specific areas covered include preprimary care (health promotion and protection, personal responsibility for health, and school health education); primary care (planning for the organization, financing, and delivery of public health services); and secondary care (general acute adult inpatient medical/surgical services, acute inpatient psychiatric services, acute inpatient pediatric care, and inpatient long-term care).

HRP-0901173/5GA PC **A16**/MF **A01**
Western Colorado Health Systems Agency, Grand Junction.
Annual Implementation Plan. Health Service Area 3, Colorado.
May 78, 368p
Sponsored in part by Health Resources Administration, Hyattsville, MD.

Descriptors: Counties, Colorado, Public health, Requirements, Objectives, Summit County(Colorado).

This document contains (1) the health system components not addressed in the first volume of the Western Colorado Health Systems Agency's health systems plan; (2) supplemental documents; and (3) the annual implementation plan. The opening material deals with tertiary care. The section contains a burn care plan, a bloodbanking and processing plan, and a cardiac catheterization-angiographic laboratory services plan. The supplemental documents are concerned with community health education. The introduction to the annual implementation plan discusses the functions of the health systems agency and major areas selected from the health systems plan for inclusion in the AIP. Goals and objectives are specified for disease prevention, public health, alternatives to institutionalization, inpatient psychiatric care, and third-party reimbursement. The remaining sections deal with potential barriers to the implementation of the AIP, the role of the community in plan development and implementation, and the impact of implementation activities. The appendixes concern plan implementation, the selection of objectives for inclusion in the AIP, resource requirements to implement short-range objectives, the AIP work program, evaluation, public involvement and review, and Federal health planning requirements.

HRP-0901260/0GA PC **A05**/MF **A01**
University of Southern California, Los Angeles. Div. of Research in Medical Education.
Practice Organization and Physician Productivity in General Internal Medicine.
Final rept.
20 Sep 78, 81p
Contract PHS-HRA-231-77-0115

Descriptors: Administration, Health care delivery organizations, Health care services, Health care, Health manpower education, Health manpower, Health occupations, Measurement, Medical personnel, Medical services, Methodology, Personal health services, *Physicians, *Productivity.

The objectives of this study were to explore the effects of certain aspects of practice organization on physician productivity and the effects of the socioeconomic context of the practice on the organization of the practice itself and on physician productivity. The data for the study came from a 1976 survey of physicians specializing in general internal medicine. The survey findings are illustrated in tabular form. A summary of the physicians' daily patient encounters for preassigned 7-day and 3-day study periods is provided. Information concerning physicians' professional and nonprofessional activities is included, as is information regarding the nature and frequency of each physician's telephone conversations with patients during the study period. In addition, information regarding the physicians' professional background and training, the support staff, the practice organization, the services typically rendered, and the demographic location of the practice is included. Three approaches were utilized in studying physician productivity across different practice arrangements: production function analysis; activity analysis; and the use of tabular comparisons. A table reveals the distribution of physicians in the following categories: individual, informal, two-physician partnership, group practice, and other. A bibliography is included.

HRP-0901349/1GA PC **A22**/MF **A01**
Central Washington Health Systems Agency, Moses Lake.
Health Systems Plan and Annual Implementation Plan. Health Service Area 3 Washington.
May 78, 520p
Grant PHS-HRA-10-P-55004-02-1

Descriptors: Counties, Washington(State), Public health, Requirements, Objectives.

The Health Systems Plan is a statement of goals for the eight county region. Some of the goals describe how health services should be organized and provided throughout the region, while some goals pertain to the health of the region's residents. The Annual Implementation Plan describes what should be done in the coming year to make progress toward accomplishing the goals stated in the HSP. Each year the Central Washington Health Systems Agency will revise these plans so that they will become broad in scope, more specific, and remain up-to-date. The major emphasis of this edition of the HSP was placed on diagnostic and treatment services in the short-stay setting and on long-term care.

NTIS/PS-79/0404/8GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Foreign Medical Graduates (A Bibliography with Abstracts).
Rept. for 1975-Apr 79,
Mary E. Young. May 79, 72p*
Supersedes NTIS/PS-78/0335, and NTIS/PS-77/0303.

Descriptors: *Bibliographies, *Medical personnel, *Physicians, Nurses, Foreign countries, Demography, Medical services, Quality assurance, Licenses, United States, Abstracts.
Identifiers: Immigration, *Foreign medical graduates, Medical education, Performance(Human), Certification, Health manpower, Health planning, Distribution, Health resources, Health manpower.

A compilation of research reports are presented on the following issues regarding the immigration of foreign trained medical personnel to the United States: (1) Immigration policies; (2) demographic and professional characteristics; (3) performance on examinations, licensing tests, and specialty certification; (4) clinical performance; (5) and information on location and professional activities. The impact of foreign medical graduates on health manpower planning is discussed. (This updated bibliography contains 63 abstracts, 17 of which are new entries to the previous edition.)

NTIS/PS-79/0408/9GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Leukemia (A Bibliography with Abstracts).
Rept. for 1964-Apr 79,
Elizabeth A. Harrison. May 79, 224p*
Supersedes NTIS/PS-78/0330, NTIS/PS-77/0311, NTIS/PS-76/0288, and NTIS/PS-75/339.

Descriptors: *Bibliographies, *Leukemias, *Blood diseases, Malignant neoplasms, Leukopenia, Pathology, Histology, Epidemiology, Drug therapy, Rehabilitation, Viruses, Diagnosis, Antineoplastic agents, Etiology, Abstracts, Chemotherapy.
Identifiers: *Cancer.

The selected abstract of research reports cover pathology, diagnosis, rehabilitation, histology, viruses and chemotherapy as applied to leukemia. Also includes leukemia in animals. (This updated bibliography contains 216 abstracts, 42 of which are new entries to the previous edition.)

NTIS/PS-79/0409/7GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Health Care Malpractice and Medical Malpractice (A Bibliography with Abstracts).
Rept. for Aug 72-Mar 79,
Elizabeth A. Harrison. May 79, 67p*
Supersedes NTIS/PS-78/0291.

Descriptors: *Bibliographies, *Health care malpractice, *Medical malpractice, Insurance, Health care costs, Health statistics, Quality assurances, Health care indexes, Standards.
Identifiers: Malpractice insurance, Health care outcome.

The selected abstracts of research reports cover the subject of professional misconduct or lack of skill in the performance of a professional act. Specific subjects covered include: Insurance, hospital liability, mediation, risk management, accident prevention, health care costs, claims, quality of care, and attitudes. The bibliography excludes legislation. (This updated bibliography contains 59 abstracts, 14 of which are new entries to the previous edition.)

NTIS/PS-79/0420/4GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Tumor Immunology (A Bibliography with Abstracts).
Rept. for 1964-Apr 79,
Elizabeth A. Harrison. May 79, 176p*
Supersedes NTIS/PS-78/0400, NTIS/PS-77/0368, NTIS/PS-76/0218, and NTIS/PS-75/222.

Descriptors: *Bibliographies, *Immunology, *Neoplasms, Malignant neoplasms, Antigens, Diagnosis, Therapy, Multiple myeloma, Hodgkins disease, Lymphatic diseases, Leukemia, Abstracts.
Identifiers: *Cancer, Immunotherapy, Gammopathies.

The bibliography presents references on research in the following areas of tumor immunology: Immunological responses of patients with tumors, including delayed hypersensitivity reactions to tumor antigens; identification of tumor antigens; immunological testing for early cancer detection; regression of tumors by immunotherapy; gammopathies including multiple myeloma, Hodgkin's disease, and lymphatic leukemia; and immunology of tumor viruses. (This updated bibliography contains 167 abstracts, 23 of which are new entries to the previous edition.)

NTIS/PS-79/0421/2GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Hypertension (A Bibliography with Abstracts).
Rept. for 1964-Apr 79,
Elizabeth A. Harrison. May 79, 216p*
Supersedes NTIS/PS-78/0398, NTIS/PS-77/0316, NTIS/PS-76/0179, and NTIS/PS-75/272.

Descriptors: *Hypertension, *Bibliographies, Blood pressure, Cardiovascular diseases, Urologic diseases, Diagnosis, Epidemiology, Risk, Etiology, Pathology, Therapy, Research, Health screening, Preventive medicine, Abstracts.
Identifiers: Medical research.

The annotated bibliography covers topics on mass screening projects, diagnosis, epidemiology, risk factors, etiology, pathology, preventive measures, and therapy of hypertension. Research reports on the relationship of high blood pressure to other diseases are also cited. (This updated bibliography contains 205 abstracts, 38 of which are new entries to the previous edition.)

N79-19669/7GA PC **E03**
National Aeronautics and Space Administration, Washington, DC.
Aerospace Medicine and Biology: A Continuing Bibliography with Indexes, Supplement 190, February 1979.
Feb 79, 82p NASA-SP-7011(190)

Descriptors: *Aerospace medicine, *Bibliographies, *Biological effects, *Exobiology, Aerospace environments, Manned space flight, Physiological effects, Psychological effects.
Identifiers: Indexes(Documentation).

For abstract, see STAR 1710

PB-293 075/8GA PC **A09**/MF **A01**
Montana Dept. of Social and Rehabilitation Services, Helena.
Montana Medicaid Quality Control System (MMQCS) Project Report.
Final rept.,
Douglas Egan, and Chris Minnerly. Sep 77, 176p HCFA/OPPR-77/12
Grant SRS-11-90117
See also PB-293 076.
Also available in set of 5 reports PC E12, PB-293 074-SET.

Descriptors: *Medicaid, *Montana, *Quality control, Financing, Design, Development, National government, Reviews, Cost analysis, Payment.
Identifiers: Health programs, Eligibility, *Health insurance, Claims review.

The report is of the design and development of the Montana Medicaid Quality Control System (MEQCS). In July 1975, the Federal Medicaid Eligibility Quality Control System (MEQC) was implemented for the purpose of improving the administration of public assistance programs. MEQC is a state administered management tool developed for the purpose of measuring the rate of erroneous medical claims and payments due to errors in recipient eligibility, and providing the basis for corrective action to improve state and local administration of the Medicaid eligibility system. The State of Montana, being a rural, sparsely populated state, chose a modified approach in undertaking the design and development of a Medicaid Quality Control System. The purpose of the project was to demonstrate the optimal small state strategy for conducting additional reviews by evaluating the cost of various levels of review scope relative to the type and magnitude of errors produced at each level. The various levels of review were designed to answer the question 'How much of the federal review procedures must be completed before an error can be detected.' The review level process would ultimately result in a methodology for Montana and other similar states to maximize information for corrective action programs using restricted manpower expenditures. Appendix A contains an independent evaluation of the Montana Medicaid Quality Control System by Touche Ross and Co.

PB-293 076/6GA PC **A04**/MF **A01**
Montana Dept. of Social and Rehabilitation Services, Helena.
Montana Medicaid Quality Control System (MMQCS). Section II - Sample Selection Subsystem.
Final rept.,
Douglas Egan, and Chris Minnerly. Oct 75, 73p HCFA/OPPR-77/13
Grant SRS-11-90117
See also PB-293 075 and PB-293 077.
Also available in set of 5 reports PC E12, PB-293 074-SET.

Descriptors: *Medicaid, *Montana, *Quality control, Financing, Design, Development, National government, Reviews, Cost analysis, Payment.
Identifiers: Health programs, Eligibility, *Claims review, Health insurance.

The purpose of this volume is to provide the sample claims to be reviewed during the claim review process. The sample claims for the review process are selected on a monthly basis from the Paid Claims File (computer file of paid invoices from Dikewood Corporation, the state's fiscal agent) and a Buy-In File (computer tape of Medicare premiums paid on behalf of Medicaid recipients). For the purposes of the Montana Medicaid Quality Control System (MMQCS) Project, a random sample of 800 paid claims is selected for a six month period. The sample is stratified (institutional/noninstitutional) and follows the sample frame of prescribed recipients as outlined in the MEQC Manual - 30000. The total sample of 800 claims is then subjected to the procedures of Level 1 (Central Office Review) and Level 2 (Local Office Case Review). The 700 claims to be reviewed as Level 3's (Local Office Abbreviated Field Review) are then selected as a random subsample of the original Level 1 and 2 claims. Then the 175 claims for the Level 4 (Full Field Review) are randomly selected from the Level 3 cases. As a result, 175 claims will receive all four levels of review, 700 claims will receive Levels 1, 2, and 3, and all 800 claims receive Levels 1 and 2 review.

PB-293 077/4GA PC **A05**/MF **A01**
Montana Dept. of Social and Rehabilitation Services, Helena.
Montana Medicaid Quality Control System (MMQCS). Section III - Claim Review Subsystem.
Final rept.,
Douglas Egan, and Chris Minnerly. 31 Oct 75, 84p HCFA/OPPR-77/14
Grant SRS-11-90117
See also PB-293 076 and PB-293 078.
Also available in set of 5 reports PC E12, PB-293 074-SET.

Descriptors: *Medicaid, *Montana, *Quality control, Financing, Design, Development, National government, Reviews, Payment.

Identifiers: Health programs, Eligibility, *Health insurance, *Claims review.

The intent of this volume is to present in adapted format the relevant material contained in Medicaid Eligibility Quality Control (MEQC) Manual/3000 as it applies to requirements of the Montana Medicaid Quality Control System (MMQCS) Claims Review Subsystem. The Claims Review Subsystem is a review process designed to provide expanded quality control data. This goal is achieved by the progression of claim samples through four levels of review. Distinct review methods at each level facilitate the extraction of quality control information in a more systematic manner than possible by the review methodology of MEQC Manual/3000. Thus, the cost of achieving certain quality control results may be less, and productivity higher, under this expanded concept than under criteria envisioned by the full field review process of MEQC Manual/3000. Accordingly, MEQC Manual/3000 procedures and documents have been modified by this section. Additional worksheets were developed and MEQC Manual/3000 worksheets and schedules modified to provide information for the management and evaluation functions described by Section IV, 'Evaluation Subsystem'. These worksheets and schedules were also designed to accommodate the sampling techniques of Section II, 'Sample Selection Subsystem'.

PB-293 078/2GA PC **A07**/MF **A01**
Montana Dept. of Social and Rehabilitation Services, Helena.
Montana Medicaid Quality Control System (MMQCS). Section IV - Evaluation Subsystem.
Final rept.,
Douglas Egan, and Chris Minnerly. 31 Oct 75, 140p HCFA/OPPR-77/15
Grant SRS-11-90117
See also PB-293 077 and PB-293 079.
Also available in set of 5 reports PC E12, PB-293 074-SET.

Descriptors: *Medicaid, *Montana, *Quality control, Evaluation, Financing, Design, Development, National government, Reviews, Cost analysis, Payment.
Identifiers: Health programs, Eligibility, *Health insurance, *Claims review.

The purpose of this volume is to describe the evaluation process within the Montana Medicaid Quality Control System (MMQCS). Subsections include a general description of the evaluation process and an explanation of steps to be performed by the State Project Control Staff in conducting QC evaluations. For detailed descriptions of automated requirements and statistical calculations, reference should be made to the technical documentation found in the appendices.

PB-293 079/0GA PC **A02**/MF **A01**
Montana Dept. of Social and Rehabilitation Services, Helena.
Montana Medicaid Quality Control System (MMQCS). Section V - Corrective Action Subsystem.
Final rept.,
Douglas Egan, and Chris Minnerly. 31 Oct 75, 23p HCFA/OPPR-77/16
Grant SRS-11-90117
See also PB-293 078.
Also available in set of 5 reports PC E12, PB-293 074-SET.

Descriptors: *Medicaid, *Montana, *Quality control, Financing, Design, Development, National government, Reviews, Cost analysis, Payment.
Identifiers: Health programs, Eligibility, *Health insurance, *Claims review.

The intent of this volume is to relate the content of the Medicaid Eligibility Quality Control (MEQC) Manual 5000, Decision Making Process for Corrective Action, to a corrective action process designed for the State of Montana. Prior to the project in Montana, a corrective action panel formed the Executive Panel twice a year to discuss the QC findings and possible solution to problems. Although this panel did have the capabilities of decision-making, staff mobilization and spending authority, it had difficulty in identifying eligibility determination problems, causes, and workable solutions. Although Corrective Action was not an objective of the MMQCS Project, the main benefit of the increased sample size was to be more reliable data for corrective action purposes. Therefore MMQCS established the working panel of a small group of individuals closely connected to eligibility who would analyze the findings, identify trends and problem areas, and make recommendations on corrective action alternatives. The working panel's recommendations would serve as input for the Corrective Action Executive Panel meeting. To keep the Executive Panel as a workable, cohesive group, there would be a group of regular attendees and a list of others to be called upon as plans involve their areas of expertise.

PB-293 122/8GA CP **T02**
National Center for Health Statistics, Hyattsville, MD. Div. of Health Examination Statistics.
Physical Measurements Data Tape from the National Health Examination Survey of Adults 18-79 Years, Cycle I, 1959-1962.
Data file,
Robert S. Murphy, and Evelyn S. Stanton. 1962, mag tape NCHS/DF-79/002
Source tape is in EBCDIC character set. Tapes can be prepared on 9-track, 1600 bpi density, odd parity, at the price shown. For price at other tracks and densities, call NTIS Computer Products Office. Price includes documentation, PB-293 123.

Descriptors: *Data file, *Medical examination, Adults, United States, Magnetic tapes, Data storage, Measurement, Humans.
Identifiers: *Health surveys, Health statistics, Health Examination Survey, *Body measurements.

The first cycle of the Health Examination Survey was an examination survey of the adult, civilian, noninstitutionalized population of the United States, excluding Alaska and Hawaii. The adult population was defined as those persons from 18-79 years of age. A nationwide probability sample of 7,710 persons aged 18-79 years was drawn. Altogether 6,672 persons were examined during the course of the survey which was begun in October 1959 and completed in December 1962. Seventeen body measurements including height and weight are coded on this file. Much of the body measurement data collected during the Cycle I survey of adults has been analyzed and published by the National Center for Health Statistics in the Vital and Health Statistics, Series 11.

PB-293 123/6GA PC **A03**/MF **A01**
National Center for Health Statistics, Hyattsville, MD. Div. of Health Examination Statistics.
Physical Measurements Data from the National Health Examination Survey of Adults 18-79 Years, Cycle I, 1959-1962, User's Guide.
Dec 77, 46p NCHS/DF-79/002A
For data file on magnetic tape, see PB-293 122.

Descriptors: *Medical examination, Adults, United States, Measurement, Humans.
Identifiers: *Health surveys, Health statistics, Health Examination Survey, *Body measurements.

The first cycle of the Health Examination Survey was an examination survey of the adult, civilian, noninstitutionalized population of the United States, excluding Alaska and Hawaii. The adult population was defined as those persons 18-79 years of age. A nationwide probability sample of 7,710 persons aged 18-79 years was drawn. Altogether 6,672 persons were examined during the course of the survey which was begun in October 1959 and completed in December 1962. Seventeen body measurements including height and weight are coded on this file. Much of the body measurement data collected during the Cycle I survey of adults has been analyzed and published by the National Center for Health Statistics in the Vital and Health Statistics, Series 11.

PB-293 124/4GA CP **T02**
National Center for Health Statistics, Hyattsville, MD. Div. of Health Examination Statistics.
Integrated Data Tape from the National Health Examination Survey of Children 6-11 Years, Cycle II, 1963-1965.
Data file,
Dale Hitchcock, and Evelyn Stanton. 1965, mag tape NCHS/DF-79/003
Source tape is in EBCDIC character set. Tapes can be prepared on 9-track, 1600 bpi density, odd parity, at the price shown. For price at other tracks and densities, call NTIS Computer Products Office. Price includes documentation, PB-293 125.

Descriptors: *Data file, *Medical examination, United States, Magnetic tapes, Data storage, Interviews, Questionnaires, Visual acuity.
Identifiers: *Health surveys, Health statistics, Health Examination Survey, Dental evaluation, Hearing, Psychological evaluation.

The Health Examination Survey, Cycle II Integrated Data Tape (IDT) contains information gathered from a nationwide probability sample of 7,417 noninstitutionalized children aged 6-11 years from 1963-1965. A total of 7,119 children were examined during the course of the survey. Information was obtained for each examined child by means of a household interview; detailed medical and developmental questionnaires; a school questionnaire; medical, dental and psychological examinations; hearing and vision tests; and anthropometric measurements. Approximately one-third of those children examined were again examined during Cycle III of the Health Examination Survey which operated from 1966-1970. Much of the data collected during the Cycle II survey of children has been published by the National Center for Health Statistics in the Vital and Health Statistics, Series 11.

PB-293 125/1GA PC **A07**/MF **A01**
National Center for Health Statistics, Hyattsville, MD. Div. of Health Examination Statistics.
Integrated Data from the National Health Examination Survey of Children 6-11 Years, Cycle II, 1963-1965, User's Guide.
Dec 77, 142p NCHS/DF-79/003A
For data file on magnetic tape, see PB-293 124.

Descriptors: *Medical examination, *Children, United States, Interviews, Questionnaires, Visual acuity.
Identifiers: *Health surveys, Health statistics, Health Examination Survey, Dental evaluation, Hearing, Psychological evaluation.

The Health Examination Survey, Cycle II Integrated Data Tape (IDT) contains information gathered from a nationwide probability sample of 7,417 noninstitutionalized children aged 6-11 years from 1963-1965. A total of 7,119 children were examined during the course of the survey. Information was obtained from each examined child by means of a household interview; detailed medical and developmental questionnaires; a school questionnaire; medical, dental and psychological examinations; hearing and vision tests; and anthropometric measurements. Approximately one-third of those children examined were again examined during Cycle III of the Health Examination Survey which operated from 1966-1970. Much of the data collected during the Cycle II survey of children has been published by the National Center for Health Statistics in the Vital and Health Statistics, Series 11.

PB-293 126/9GA CP **T02**
National Center for Health Statistics, Hyattsville, MD. Div. of Health Examination Statistics.
Symptoms of Psychological Distress Data Tape from the National Health Examination Survey of Adults 18-79 Years, Cycle I, 1959-1962.
Data file,
Harold J. Dupuy, and Evelyn Stanton. 1962, mag tape NCHS/DF-79/004
Source tape is in EBCDIC character set. Tapes can be prepared on 9-track, 1600 bpi density, odd parity, at the price shown. For price at other tracks and densities, call NTIS Computer Products Office. Price includes documentation, PB-293 127.

Descriptors: *Data file, *Stress(Psychology), *Mental disorders, Adults, United States, Magnetic tapes, Data storage, Signs and symptoms.
Identifiers: *Health surveys, Health statistics, Health Examination Survey, *Psychological evaluation.

The first cycle of the Health Examination Survey was an examination survey of the adult, civilian, noninstitutionalized population of the United States, excluding Alaska and Hawaii. The adult

population was defined as those persons from 18-79 years of age. A nationwide probability sample of 7,710 persons aged 18-79 years was drawn. Altogether 6,672 persons were examined during the course of the survey which was begun in October 1959 and completed in December 1962. Responses to 12 items from a medical history questionnaire which were selected as indicators of psychological distress are coded on this file. The following report based on these data has been published by the National Center for Health Statistics: Selected Symptoms of Psychological Distress, United States; Vital and Health Statistics, Series 11, Number 37.

PB-293 127/7GA PC **A04**/MF **A01**
National Center for Health Statistics, Hyattsville, MD. Div. of Health Examination Statistics.
Symptoms of Psychological Distress Data from the National Health Examination Survey of Adults 18-79 Years, Cycle I, 1959-1962, User's Guide.
Dec 77, 58p NCHS/DF-79/004A
For data file on magnetic tape, see PB-293 126.

Descriptors: *Stress(Psychology), *Mental disorders, Adults, United States, Signs and symptoms.
Identifiers: *Health surveys, Health statistics, Health Examination Survey, *Psychological evaluation.

The first cycle of the Health Examination Survey was an examination of the adult, civilian, noninstitutionalized population of the United States, excluding Alaska and Hawaii. The adult population was defined as those persons from 18-79 years of age. A nationwideprobability sample of 7,710 persons aged 18-79 years was drawn. Altogether 6,672 persons were examined during the course of the survey which was begun in October 1959 and completed in December 1962. Responses to 12 items from a medical history questionnaire which were selected as indicators of psychological distress are coded on this file. The following report based on these data has been published by the National Center for Health Statistics: Selected Symptoms of Psychological Distress, United States; Vital and Health Statistics, Series 11, Number 37.

PB-293 128/5GA CP **T02**
National Center for Health Statistics, Hyattsville, MD. Div. of Health Examination Statistics.
Dental Findings Data Tape from the National Health Examination Survey of Adults 18-79 Years, Cycle I, 1959-1962.
Data file,
James Kelly, and Evelyn S. Stanton. 1962, mag tape NCHS/DF-79/005
Source tape is in EBCDIC character set. Tapes can be prepared on 9-track, 1600 bpi density, odd parity, at the price shown. For price at other tracks and densities, call NTIS Computer Products Office. Price includes documentation, PB-293 129.

Descriptors: *Data file, *Dentistry, Adults, United States, Magnetic tapes, Data storage, Oral diseases.
Identifiers: *Health surveys, Health statistics, Health Examination Survey, Oral hygiene, *Dental care, Malocclusion.

The first cycle of the Health Examination Survey was an examination survey of the adult, civilian, noninstitutionalized population of the United States, excluding Alaska and Hawaii. The adult population was defined as those persons from 18-79 years of age. A nationwide probability sample of 7,710 persons aged 18-79 years was drawn. Altogether 6,672 persons were examined during the course of the survey which was begun in October 1959 and completed in December 1962. Findings from a dental examination are coded including the condition of individual teeth and assessments of peridontal disease, oral hygiene, and malocclusion. Much of the dental data collected during the Cycle I survey of adults has been analyzed and published by the National Center for Health Statistics in the Vital and Health Statistics, Series 11.

PB-293 129/3GA PC **A03**/MF **A01**
National Center for Health Statistics, Hyattsville, MD. Div. of Health Examination Statistics.
Dental Findings Data from the National Health Examination Survey of Adults 18-79 Years, Cycle I, 1959-1962, User's Guide.
Dec 77, 31p NCHS/DF-79/005A
For data file on magnetic tape, see PB-293 128.

Descriptors: *Dentistry, Adults, United States, Oral diseases.
Identifiers: *Health surveys, Health statistics, Health Examination Survey, Oral hygiene, *Dental care, Malocclusion.

The first cycle of the Health Examination Survey was an examination survey of the adult, civilian, noninstitutionalized population of the United States, excluding Alaska and Hawaii. The adult population was defined as those persons from 18-79 years of age. A nationwide probability sample of 7,710 persons aged 18-79 years was drawn. Altogether 6,672 persons were examined during the course of the survey which was begun in October 1959 and completed in December 1962. Findings from a dental examination are coded including the condition of individual teeth and assessments of peridontal disease, oral hygiene, and malocclusion. Much of the dental data collected during the Cycle I survey of adults has been analyzed and published by the National Center for Health Statistics in the Vital and Health Statistics, Series 11.

PB-293 130/1GA CP **T02**
National Center for Health Statistics, Hyattsville, MD. Div. of Health Examination Statistics.
Osteoarthritis and Rheumatoid Arthritis Data Tape from the National Health Examination Survey of Adults 18-79 Years, Cycle I, 1959-1962.
Data file,
Jean Roberts, and Evelyn Stanton. 1962, mag tape NCHS/DF-79/006
Source tape is in EBCDIC character set. Tapes can be prepared on 9-track, 1600 bpi density, odd parity, at the price shown. For price at other tracks and densities, call NTIS Computer Products Office. Price includes documentation, PB-293 131.

Descriptors: *Data file, *Medical examination, *Osteoarthritis, *Rheumatoid arthritis, Adults, United States, Magnetic tapes, Data storage, Musculoskeletal disorders.
Identifiers: *Health surveys, Health statistics, Health Examination Survey.

The first cycle of the Health Examination Survey was an examination survey of the adult, civilian, noninstitutionalized population of the United States, excluding Alaska and Hawaii. The adult population was defined as those persons from 18-79 years of age. A nationwide probability sample of 7,710 persons aged 18-79 years was drawn. Altogether 6,672 persons were examined during the course of the survey which was begun in October 1959 and completed in December 1962. Included on this tape are findings pertaining to osteoarthritis and rheumatoid arthritis from x-rays of the hands and feet, medical history items, and a physician's examination. Much of the osteoarthritis and rheumatoid arthritis data has been analyzed and published by the National Center for Health Statistics in the Vital and Health Statistics, Series 11.

PB-293 131/9GA PC **A06**/MF **A01**
National Center for Health Statistics, Hyattsville, MD. Div. of Health Examination Statistics.
Osteoarthritis and Rheumatoid Arthritis Data Tape from the National Health Examination Survey of Adults 18-79 Years, Cycle I, 1959-1962, User's Guide.
Dec 77, 106p NCHS/DF-79/006A
For data file on magnetic tape, see PB-293 130.

Descriptors: *Medical examination, *Osteoarthritis, *Rheumatoid arthritis, Adults, United States, Musculoskeletal disorders.
Identifiers: *Health surveys, Health statistics, Health Examination Survey.

The first cycle of the Health Examination Survey was an examination survey of the adult, civilian, noninstitutionalized population of the United States, excluding Alaska and Hawaii. The adult population was defined as those persons from 18-79 years of age. A nationwide probability sample of 7,710 persons aged 18-79 years was drawn. Altogether 6,672 persons were examined during the course of the survey which was begun in October 1959 and completed in December 1962. Included on this tape are findings pertaining to osteoarthritis and rheumatoid arthritis from x-rays of the hands and feet, medical history items, and a physician's examination. Much of the osteoarthritis and rheumatoid arthritis data has been analyzed and published by the National Center for Health Statistics in the Vital and Health Statistics, Series 11.

PB-293 132/7GA CP **T02**
National Center for Health Statistics, Hyattsville, MD. Div. of Health Examination Statistics.
Diabetes Data Tape from the National Health Examination Survey of Adults 18-79 Years, Cycle I, 1959-1962.
Data file,
Robert S. Murphy, and Evelyn S. Stanton. 1962, mag tape NCHS/DF-79/007
Source tape is in EBCDIC character set. Tapes can be prepared on 9-track, 1600 bpi density, odd parity, at the price shown. For price at other tracks and densities, call NTIS Computer Products Office. Price includes documentation, PB-293 133.

Descriptors: *Data file, *Medical examination, *Diabetes mellitus, Adults, United States, Magnetic tapes, Data storage, Metabolic diseases, Endocrine diseases, Cholesterol.
Identifiers: *Health surveys, Health statistics, Health Examination Survey, Glucose tolerance test.

The first cycle of the Health Examination Survey was an examination survey of the adult, civilian, noninstitutionalized population of the United States, excluding Alaska and Hawaii. The adult population was defined as those persons from 18-79 years of age. A nationwide probability sample of 7,710 persons aged 18-79 years was drawn. Altogether 6,672 persons were examined during the course of the survey which was begun in October 1959 and completed in December 1962. Included in this file are responses to medical history questions which relate to diabetes, pertinent findings from a physical examination, results of a Glucose Tolerance Test (GTT), and serum cholesterol values. Much of the diabetes findings from the Cycle I survey of adults has been analyzed and published by the National Center for Health Statistics in the Vital and Health Statistics Series 11, Number 2.

PB-293 133/5GA PC **A02**/MF **A01**
National Center for Health Statistics, Hyattsville, MD. Div. of Health Examination Statistics.
Diabetes Data from the National Health Examination Survey of Adults 18-79 Years, Cycle I, 1959-1962, User's Guide.
Dec 77, 16p NCHS/DF-79/007A
For data file on magnetic tape, see PB-293 132.

Descriptors: *Medical examination, *Diabetes mellitus, Adults, United States, Metabolic diseases, Endocrine diseases.
Identifiers: *Health surveys, Health statistics, Health Examination Survey, Glucose tolerance test.

The first cycle of the Health Examination Survey was an examination survey of the adult, civilian, noninstitutionalized population of the United States, excluding Alaska and Hawaii. The adult population was defined as those persons from 18-79 years of age. A nationwide probability sample of 7,710 persons aged 18-79 years was drawn. Altogether 6,672 persons were examined during the course of the survey which was begun in October 1959 and completed in December 1962. Included in this file are responses to medical history questions which related to diabetes, pertinent findings from a physical examination, results of a Glucose Tolerance Test (GTT), and serum cholesterol values. Much of the diabetes findings from the Cycle I survey of adults has been analyzed and published by the National Center for Health Statistics in the Vital and Health Statistics Series 11, Number 2.

PB-293 134/3GA CP **T02**
National Center for Health Statistics, Hyattsville, MD. Div. of Health Examination Statistics.

Demographic Data Tape from the National Health Examination Survey of Adults 18-79 Years, Cycle I, 1959-1962.
Data file,
Robert S. Murphy, and Evelyn Stanton. Dec 62, mag tape NCHS/DF-79/008
Source tape is in EBCDIC character set. Tapes can be prepared on 9-track, 1600 bpi density, odd parity, at the price shown. For price at other tracks and densities, call NTIS Computer Products Office. Price includes documentation, PB-293 135.

Descriptors: *Data file, *Demography, Adults, United States, Magnetic tapes, Data storage, Age, Sex, Income, Education, Activity.
Identifiers: *Health surveys, Health statistics, Health Examination Survey, Race.

The first cycle of the Health Examination Survey was an examination survey of the adult, civilian, noninstitutionalized population of the United States, excluding Alaska and Hawaii. The adult population was defined as those persons from 18-79 years of age. A nationwide probability sample of 7,710 persons aged 18-79 years was drawn. Altogether 6,672 persons were examined during the course of the survey which was begun in October 1959 and completed in December 1962. This data tape contains demographic, household and personal information for each sample person including age, race, sex, income, education, region, size of residence, usual activity and sampling weight. This information has been used in the analyses and publication of the health data collected during the Cycle I survey of adults.

PB-293 135/0GA PC **A04**/MF **A01**
National Center for Health Statistics, Hyattsville, MD. Div. of Health Examination Statistics.
Demographic Data from the National Health Examination Survey of Adults 18-79 Years, Cycle I, 1959-1962, User's Guide.
Dec 77, 55p NCHS/DF-79/008A
For data file on magnetic tape, see PB-293 134.Portions of this document are not fully legible.

Descriptors: *Demography, Adults, United States, Age, Sex, Income, Education, Activity.
Identifiers: *Health surveys, Health statistics, Health Examination Survey, Race.

The first cycle of the Health Examination Survey was an examination survey of the adult, civilian, noninstitutionalized population of the United States, excluding Alaska and Hawaii. The adult population was defined as those persons from 18-79 years of age. A nationwide probability sample of 7,710 persons aged 18-79 years was drawn. Altogether 6,672 persons were examined during the course of the survey which was begun in October 1959 and completed in December 1962. This data tape contains demographic, household and personal information for each sample person including age, race, sex, income, education, region, size of residence, usual activity and sampling weight. This information has been used in the analyses and publication of the health data collected during the Cycle I survey of adults.

PB-293 136/8GA CP **T02**
National Center for Health Statistics, Hyattsville, MD. Div. of Health Examination Statistics.
Vision Data Tape from the National Health Examination Survey of Adults 18-79 Years, Cycle I, 1959-1962.
Data file,
Jean Roberts, and Evelyn Stanton. 1962, mag tape NCHS/DF-79/009
Source tape is in EBCDIC character set. Tapes can be prepared on 9-track, 1600 bpi density, odd parity, at the price shown. For price at other tracks and densities, call NTIS Computer Products Office. Price includes documentation, PB-293 137.

Descriptors: *Data file, *Visual acuity, *Medical examination, Adults, United States, Magnetic tapes, Data storage.
Identifiers: *Health surveys, Health statistics, Health Examination Survey.

The first cycle of the Health Examination Survey was an examination survey of the adult, civilian, noninstitutionalized population of the United States, excluding Alaska and Hawaii. The adult population was defined as those persons from 18-79 years of age. A nationwide probability sample of 7,710 persons aged 18-79 years was drawn. Altogether 6,672 persons were examined during the course of the survey which was begun in October 1959 and completed in December 1962. Included in this file are findings from a vision examination which measured corrected and uncorrected visual acuity for near and far vision. Much of the vision data collected during the Cycle I survey of adults has been analyzed and published by the National Center for Health Statistics in the Vital and Health Statistics, Series 11.

PB-293 137/6GA PC **A02**/MF **A01**
National Center for Health Statistics, Hyattsville, MD. Div. of Health Examination Statistics.
Vision Data from the National Health Examination Survey of Adults 18-79 Years, Cycle I, 1959-1962, User's Guide.
Dec 77, 15p NCHS/DF-79/009A
For data file on magnetic tape, see PB-293 136.

Descriptors: *Visual acuity, *Medical examination, Adults, United States.
Identifiers: *Health surveys, Health statistics, Health Examination Survey.

The first cycle of the Health Examination Survey was an examination survey of the adult, civilian, noninstitutionalized population of the United States, excluding Alaska and Hawaii. The adult population was defined as those persons from 18-79 years of age. A nationwide probability sample of 7,710 persons aged 18-79 years was drawn. Altogether 6,672 persons were examined during the course of the survey which was begun in October 1959 and completed in December 1962. Included in this file are findings from a vision examination which measured corrected and uncorrected visual acuity for near and far vision. Much of the vision data collected during the Cycle I survey of adults has been analyzed and published by the National Center for Health Statistics in the Vital and Health Statistics, Series 11.

PB-293 138/4GA CP **T02**
National Center for Health Statistics, Hyattsville, MD. Div. of Health Examination Statistics.
Cardiovascular Findings Data Tape from the National Health Examination Survey of Adults 18-79 Years, Cycle I, 1959-1962.
Data file,
Robert S. Murphy, and Evelyn S. Stanton. 1962, mag tape NCHS/DF-79/010
Source tape is in EBCDIC character set. Tapes can be prepared on 9-track, 1600 bpi density, odd parity, at the price shown. For price at other tracks and densities, call NTIS Computer Products Office. Price includes documentation, PB-293 139.

Descriptors: *Data file, *Medical examination, *Cardiovascular system, Adults, United States, Magnetic tapes, Data storage, Blood pressure, Electrocardiography, X rays, Cholesterol.
Identifiers: *Health surveys, Health statistics, Health Examination Survey.

The first cycle of the Health Examination Survey was an examination survey of the adult, civilian, noninstitutionalized population of the United States, excluding Alaska and Hawaii. The adult population was defined as those persons from 18-79 years of age. A nationwide probability sample of 7,710 persons aged 18-79 years was drawn. Altogether 6,672 persons were examined during the course of the survey which was begun in October 1959 and completed in December 1962. Cardiovascular information is coded on this file from a medical history questionnaire, physician's examination, blood pressure readings, ECG readings, chest x-rays and a test for serum cholesterol. Much of the cardiovascular data has been analyzed and published by the National Center for Health Statistics in the Vital and Health Statistics, Series 11.

PB-293 139/2GA PC **A05**/MF **A01**
National Center for Health Statistics, Hyattsville, MD. Div. of Health Examination Statistics.
Cardiovascular Findings Data from the National Health Examination Survey of Adults 18-79 Years, Cycle I, 1959-1962, User's Guide.
Dec 77, 88p NCHS/DF-79/010A
For data file on magnetic tape, see PB-293 138.Portions of this document are not fully legible.

Descriptors: *Medical examination, *Cardiovascular system, Adults, United States, Blood pressure, Electrocardiography, X rays, Cholesterol.
Identifiers: *Health surveys, Health statistics, Health Examination Survey.

The first cycle of the Health Examination Survey was an examination survey of the adult, civilian, noninstitutionalized population of the United States, excluding Alaska and Hawaii. The adult population was defined as those persons from 18-79 years of age. A nationwide probability sample of 7,710 persons aged 18-79 years was drawn. Altogether 6,672 persons were examined during the course of the survey which was begun in October 1959 and completed in December 1962. Cardiovascular information is coded on this file from a medical history questionnaire, physician's examination, blood pressure readings, ECG readings, chest x-rays and a test for serum cholesterol. Much of the cardiovascular data has been analyzed and published by the National Center for Health Statistics in the Vital and Health Statistics, Series 11.

PB-293 322/4GA PC **A09**/MF **A01**
Brandeis Univ., Waltham, MA.
Planning Mental Health Service for a Declining Economy.
Executive summary (Final) 30 Jun 76-30 Sep 77, Elliott D. Sclar, and Victor Hoffman. Jan 78, 199p NCHSR-79/93
Grant PHS-HS-02266

Descriptors: Prediction, Economic models, Econometrics, Regression analysis, Low income groups, Measurement, Specifications, Inflation(Economics), Unemployment, Time series analysis, Statistical data, Socioeconomic factors, Stress(Psychology).
Identifiers: *Health care utilization, *Mental health services, *Econometric models, Economic indicators, Health services research, Health care services, Disadvantaged persons, *Health planning.

The research objective is to develop an econometric model to predict utilization of mental health services from changes in economic indicators. The hypothesis is that the availability of mental health services, population, and stress are determinants of the utilization of mental health services. The study site is Fitchburg-Leominster, Massachusetts mental health catchment area, an economically depressed area. The dependent variable, utilization, is measured by episodes of inpatient and outpatient mental health services over 1950-1975 with the local unemployment rate and trend variables representing supply and population. Regression analyses with polynomial distributed lags were used to estimate the time series model for annual, quarterly, and monthly data. Unemployment rates have direct effect upon outpatient utilization and inverse effects upon inpatient utilization. The structure of time lags through which unemployment affects utilization varies widely between inpatient and outpatient series.

PB-293 468/5GA PC **A07**/MF **A01**
California Univ., San Francisco.
Drug Coverage Under National Health Insurance: Proceedings of the National Conference, Held at Dulles International Airport, VA. on 5-7 October 1977.
Research proceedings series, 1 Aug 77-30 Jun 78,
Milton Silverman, and Mia Lydecker. Jun 78, 145p NCHSR-79/32, DHEW/PUB/HRA-78/3208
Contract PHS-HS-02969
See also PB-272 074.

Descriptors: *Drugs, United States, Policies, Research, Pharmaceutical industry, Economics, Consumers, National government, Cost control, Containment, Pharmacy, Data processing, Legislation, Law(Jurisprudence).
Identifiers: *Health insurance, *National health insurance, Department of Health Education and Welfare, Third party payers, Health legislation, Quality assurance, *Prescription drugs.

The conference was designed to consider major research essential to support policy decisions in

the field of drug coverage under national health insurance in the U.S. Attendees reflected interests to pharmacy, medicine, the drug industry, drug economics, the government, and consumer groups. Presentations focused on current health insurance plans of DHEW and on the needs for drug coverage. Special attention was directed toward: (1) drug insurance and the quality of care; (2) cost containment; (3) coverage of full pharmacy services; (4) drug insurance and automatic data processing; and (5) the policy needs of pharmacy, medicine, the industry, and consumers. Evident differences emerged on such matters as price controls, formularies, drug utilization review, reimbursement policies, and which beneficiaries and which drug products should be covered. There was apparent agreement, however, that the financial cost of an appropriate drug insurance program would be more than offset by savings in minimizing more costly physician visits and hospitalization.

PB-293 473/5GA PC **A03**/MF **A01**
Harvard Center for Community Health and Medical Care, Boston, MA.
Assessing the Quality of Long-Term Care.
Summary rept. 1 Jul 72-29 Dec 75,
Ellen W. Jones, Paul M. Densen, and Barbara J. McNitt. Jul 78, 33p DHEW/PUB/PHS-78/3192, NCHSR-78/179
Grant PHS-HS-01162
See also report dated 13 Dec 76, PB-271 389.

Descriptors: Patients, Measurement, Evaluation, Assessments, Classifications.
Identifiers: *Quality assessment, Health services research, *Long term care, *Nursing homes, Health status, Quality assurance, Health care outcomes.

The research reported here demonstrates the usefulness of a standardized patient assessment system as the basis for developing information on quality of care in the long-term care field. The system is built on a set of descriptors published in Patient Classification for Long-Term Care: User's Manual (DHEW Pub. No. (HRA) 75-3107). By use of the system in sequential assessments of 1,534 patients newly admitted to seven nursing homes and 279 patients in a chronic disease hospital, data was obtained to show different approaches to issues of quality through measurement of changes in patient status. These findings have implications for PSRO activities, for survey and certification processes, and for rate-setting and reimbursement policy in the long term care field. Furthermore, the participating nursing home and hospital personnel found the system a powerful tool for patient care planning, utilization review and discharge planning, and continued to use it after the study was concluded.

PB-293 492/5GA PC **A05**/MF **A01**
California Univ., Los Angeles.
Proceedings of the Health Survey Research Methods: Biennial Conference (2nd) Held at Williamsburg, Virginia on May 4-6, 1977.
Rept. for 30 Sep 76-31 Oct 78,
Leo G. Reeder. May 78, 100p DHEW/PUB/PHS-79/3207, NCHSR-79/5
Grant PHS-HS-02746
See also report dated 2 May 75, PB-262 230. Sponsored in part by National Center for Health Statistics, Hyattsville, MD., and Veterans Administration, Washington, DC.

Descriptors: *Meetings, Surveys, Methodology, Design, Responses, National government, Data acquisition, Interviews, Validity, Confidential information, Ethics.
Identifiers: *Health surveys, Health services research, Office of Management and Budget.

The conference report is intended to inform those who use health survey methods of recent advances in such methods, continuing concerns of which users should be aware, and areas requiring further methodological research. The conference concentrated on these major topics: (1) Total survey design; (2) response rates; (3) respondent burden, and; (4) standard measures of standard variables. Also addressed was the interface between researchers and the Office of Management and Budget. The conference was supported by a conference grant from the National Center for Health Services Research, and contracts with the National Center for Health Statistics and the Veteran's Administration.

PB-293 497/4GA PC **A03**/MF **A01**
Boston Univ., MA. School of Medicine.
Protecting Ischemic Myocardium and Minimizing Infarct Size: Experimental Interventions and Studies Fundamental Thereto.
Final scientific rept. 30 Jun 75-29 Jun 78,
William B. Hood, Jr. 25 Oct 78, 28p
Contract N01-HV-5-3001
See also report dated 31 Mar 77, PB-279 798.

Descriptors: *Ischemia, *Myocardial infarction, *Cardiovascular diseases, *Heart diseases, Dogs, Laboratory animals, Hypoxia, Glycolysis, Pathology, In vitro analysis, Drug therapy, Performance, Contraction, Experimental data, Heart, Cardiology, Nitroglycerine, Metabolism.

A systematic investigation was carried out of the effects of ischemia in isolated perfused heart systems and in intact dogs with coronary occlusion. In isolated hearts, mechanical and metabolic effects of ischemia and reflow were characterized, and glucose and insulin were noted to be protective under conditions of moderate ischemia. In intact dogs, models of ischemic mechanical dysfunction were developed. Intraaortic balloon counterpulsation and hypothermia exerted protective effects, while nitroglycerin infusion did not. Mechanical dysfunction was noted to be a sensitive indicator of ischemia, appearing promptly after coronary occlusion and resolving slowly with reperfusion.

PB-293 523/7GA PC **A06**/MF **A01**
Health Care Management Systems, Inc., La Jolla, CA.
PSRO Ambulatory Care Quality Assurance Review. Volume I. Program Overview and Discussion. Number 1. Bronx Professional Standards Review Organization.
Final rept. Oct 76-78,
M. A. Ryland, N. H. White, M. S. Foreman, and M. Alpaugh. Dec 78, 125p HCFA/OPPR-78/29
Contract DHEW/HCFA-240-76-0101
Sponsored in part by Robert Wood Johnson Foundation, Princeton, NJ. See PB-293 524.

Descriptors: Financing, Reviews, Methodology, Medical records, Hospital, Design, Planning, Costs, Resources, Assessments, Administration, Criteria, Data collection, Data processing, Decision making.
Identifiers: *Quality assurance, *Professional standards review organizations, PSRO(Professional Standards Review Organizations), Health programs, *Ambulatory health care.

The report is of the Bronx Professional Standards Review Organization (BPSRO) ambulatory care review demonstration project which was part of a demonstration program initiated by HSQB to examine ambulatory care review methods within Professional Standards Review Organizations. Five demonstration projects were selected representing a variety of locations and proposed methods (Bronx, Central Massachusetts, Southcentral Pennsylvania and New Mexico PSROs and Multnomah Foundation for Medical Care). The BPSRO initial demonstration effort (Oct 1976 to Oct 1978) included two major tasks: (1) To study a four-year retrospective sample of hospital and ambulatory records of patients rehospitalized for selected diagnostic conditions, in order to assess the potential relationships between episodes of rehospitalization and ambulatory care; and (2) To compare a matched group of single admission patients with the readmission group to determine relative differences in ambulatory care. Subsequently funds have been awarded to continue ambulatory review activities through September 1979.

PB-293 524/5GA PC **A05**/MF **A01**
Health Care Management Systems, Inc., La Jolla, CA.
Cooperative Demonstration and Analysis of Ambulatory Care Quality Assurance Review Methodology in PSRO Settings. Volume II. Policy Recommendations and Technical Guidelines.
Final rept. Oct 76-78,
M. A. Ryland, N. H. White, M. S. Foreman, and M. Alpaugh. Dec 78, 100p HCFA/OPPR-78/34
Contract DHEW/HCFA-240-76-0101
Sponsored in part by Robert Wood Johnson Foundation, Princeton, NJ. See also report dated Nov 77, PB-293 525, and PB-293 523.

Descriptors: Financing, Reviews, Methodology, Medical records, Hospital, Design, Policies, Recommendations, Guidelines.
Identifiers: *Quality assurance, *Professional standards review organizations, PSRO(Professional Standards Review Organizations), Health programs, *Ambulatory health care.

The report is directed to the Health Standards Quality Bureau (HSQB) and other agencies involved in medical care quality assurance and utilization review in a regulatory environment. It contains a summary of management and technical principles to assist PSROs in building an ambulatory care review capability either through demonstrations or as components of their operational review programs. This volume is organized into four major sections: (1) 'Background and Approach' describes a framework for future discussions of ambulatory care review; (2) 'HSQB Policy Recommendations' presents a set of important broad suggestions aimed at HSQB administration as well as other federal policy-making agencies involved in ambulatory care quality assurance review. Policy recommendations are meant to be broad aims or long-range objectives which provide the basis for detailed planning and executive action; (3) this section deals with PSRO management functions in ambulatory care review; (4) this section deals with technical issues and principles important to the successful planning and operation of ambulatory review systems. The main areas covered are: (1) topic/problem selection; (2) topic and criteria refinement; (3) data collection; (4) data processing and analysis; (5) review and decision making; (6) feedback/intervention, and (7) restudy.

PB-293 525/2GA PC **A13**/MF **A01**
Health Care Management Systems, Inc., La Jolla, CA.
Cooperative Demonstration and Analysis of Ambulatory Care Quality Assurance Review Methodology in PSRO Settings. Appendix I to PSRO Ambulatory Care Quality Assurance Review.
Interim rept. Oct 76-77,
Nov 77, 300p HCFA/OPPR-78/35
Contract DHEW/HCFA-240-76-0101
Sponsored in part by Robert Wood Johnson Foundation, Princeton, NJ. See also PB-293 523.

Descriptors: Financing, Reviews, Methodology, Recommendations, Hospital.
Identifiers: *Quality assurance, *Professional standards review organizations, PSRO(Professional Standards Review Organizations), Health programs, *Ambulatory health care.

The report is of the first year of a two-year demonstration project by five Professional Standards Review Organizations (PSRO) on ambulatory care review, Bronx PSRO, Central Massachusetts PSRO, The Multnomah Foundation for Medical Care, New Mexico PSRO and Southcentral Pennsylvania PSRO. The purpose of the report is fourfold: (1) To summarize the first year of PSRO activity by presenting a variety of quantitative and descriptive documentation; (2) To document findings of preliminary investigation of review techniques employed by each PSRO; (3) To guide future technical assistance conducted by the Health Standards Quality Bureau and Health Care Management Systems and (4) To provide recommendations regarding implementation of ambulatory care review systems by current and future PSRO demonstration projects. Throughout the first year, HCMS's primary role was to provide technical assistance to each PSRO.

PB-293 573/2GA PC **A02**/MF **A01**
Western Chemical Research Corp., Fort Collins, CO.
The Development of Antisera to Benzo(a)Pyrene and its Metabolites.
Final rept. on Phase 1, 1 Oct 77-31 Mar 78,
K. Painter. 24 Mar 78, 18p 78-01, NSF/RA-780468
Grant NSF-AEN77-19698

Descriptors: *Immune serums, *Vaccines, Synthesis(Chemistry), Immunology, Feasibility studies, Aromatic polycyclic hydrocarbons, Rabbits, Laboratory animals, Chlorine organic compounds, Phosgene, Serology.
Identifiers: Metabolites, *Benzopyrene, Radioimmunoassay, Carbonic acid/chloro, Hemisuccinates.

The project performed the necessary synthetic chemistry and immunology to develop antisera to benzo(a) pyrene (BP) and its metabolites. A feasibility study was conducted in the synthesis of BP conjugates for use in immunizing animals to produce antisera against BP and its metabolites. The authors demonstrated the feasibility of BP conjugate preparation by synthesizing seven BP conjugates. Six of the conjugates were characterized and each was injected into three white New Zealand rabbits (eighteen animals in total), and the animals are currently receiving booster injections. Since only 5mg quantities of the precursors were available, the synthetic route employed involved a reaction of the various hydroxy BP precursors with phosgene to yield chlorocarbonate derivatives, which were then coupled to bovine serum albumin (BSA) by standard methods. The feasibility of preparing BP-BSA conjugates with small amounts of starting materials is demonstrated. Also immunized were animals with these materials, but it is too soon to begin to evaluate the immunological response. It is quite feasible to prepare immunogens of suspected environmental pollutants. The implication is that antisera can be elicited and harvested to be used in the development of more sensitive methods of monitoring chemical threats to the environment.

PB-293 783/7GA PC **A03**/MF **A01**
California Univ., Los Angeles. Dept. of Pediatrics.
A Follow-up Study of Clinical and Immunological Responses in Children Who Previously Received Smallpox Vaccine Subcutaneously.
Final rept. Jul 75-Feb 77,
James D. Cherry, and Ursula T. Rolfe. 24 Jun 77, 26p DAB-VDP-02-12
Contract N01-AI-52523
Prepared in cooperation with Saint Louis Univ., MO. School of Medicine.

Descriptors: *Immunology, *Smallpox, *Vaccines, Children, Responses, Immunity, Missouri, Antigens, Skin(Anatomy), Antibodies, Evaluation, Concentration(Composition), Serology, Experimental data.
Identifiers: Medical research, *Immune response, Saint Louis(Missouri).

A percutaneous revaccination study involving 59 children was conducted at the St. Louis study center in 1975 and 1976. Vaccinia viral antigen skin tests were performed on 17 children and all but three children had positive, but otherwise unremarkable, responses. Of 52 children revaccinated all but four had accelerated reactions. There was no difference in size of lesions or day of maximum erythema among the four study groups. Only 66% of children originally vaccinated subcutaneously who did not have post-challenge neutralizing antibody had measurable neutralizing antibody following revaccination. Transformation studies with vaccinia viral antigen prior to and after revaccination were performed on lymphocytes from 50 children. There were no appreciable differences in responses either before or after revaccination when the four groups were compared. In primary subcutaneous vaccine recipients without pre-revaccination neutralizing antibody lymphocyte transformation correlated directly with the neutralizing antibody response.

PB-293 789/4GA PC **A99**/MF **A01**
Washington Univ., Seattle. Dept. of Health Services.
The Impact of the Blue Cross and Medicaid Prospective Reimbursement Systems in Downstate New York.
Final rept.,
William L. Dowling, Peter J. House, Jeffrey M. Lehman, Gary L. Meade, and Nancy Teague. Jun 76, 775p HCFA/OPPR-76/49
Contract DHEW-OS-74-248
See also report dated Apr 76, PB-293 142.Portions of this document are not fully legible.

Descriptors: *Hospitals, *Medicaid, *Payment, New York, Evaluation, Cost analysis, Financing, Trends, Design, Regression analysis, Rates(Costs), Cost control, Containment, Perception, Financial management, Statistical data.
Identifiers: *Blue Cross plan, *Prospective reimbursement, *Reimbursements, Rate setting, *New York City(New York), Hospital administrators, Third party payers.

The purpose of this study is to evaluate the impact of the New York Blue Cross and Medicaid prospective reimbursement systems on the hospitals in Downstate New York. The evaluation focuses on determining whether the Blue Cross and Medicaid approach to prospective reimbursement acted to contain or moderate cost increases in the 185 Blue Cross/Medicaid participating hospitals in the 17-county Greater New York City region (without adversely affecting their quality or financial viability). The key questions are: Does this approach to reimbursement work, and what effects does it have on hospitals. Specifically, the objectives of the evaluation are: (1) to determine the effect of the Blue Cross and Medicaid prospective reimbursement systems on (a) costs, (b) cost-influencing aspects of operation (e.g., utilization, quality, scope of services, efficiency, teaching programs, etc.), and (c) financial status in Downstate New York hospitals, (2) to determine the cost of implementing and operating similar reimbursement systems elsewhere.

6F. Environmental Biology

NTIS/PS-79/0410/5GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Medical Entomology. Volume 3. 1976-April, 1979 (A Bibliography with Abstracts).
Rept. for 1976-Apr 79,
Elizabeth A. Harrison. May 79, 104p*
Supersedes NTIS/PS-78/0397, NTIS/PS-77/0301, NTIS/PS-76/0293, and NTIS/PS-75/360. See also Volume 1, 1964-1969, NTIS/PS-75/361 and Volume 2, 1970-1975, NTIS/PS-78/0396.

Descriptors: *Disease vectors, *Entomology, *Insect vectors, *Bibliographies, Culicidae, Diptera, Siphonaptera, Ticks, Arthropoda, Insects, Ecology, Life cycles, Biology, Infectious diseases, Parasitic diseases, Viral diseases, Epidemiology, Microorganisms, Abstracts.
Identifiers: *Host parasite relations.

The bibliography cites reports on the biology and ecology of insects as disease vectors. Research is included on host-parasite relations, life cycles, and geographical distribution. Disease transmission and epidemiology are also covered. Reports on insect control are excluded. (This updated bibliography contains 95 absstracts, 23 of which are new entries to the previous edition.)

N79-19592/1GA PC **A12**/MF **A01**
National Aeronautics and Space Administration. Wallops Station, Wallops Island, VA.
Radar, Insect Population Ecology, and Pest Management.
C. R. Vaughn, W. Wolf, and W. Klassen. Mar 79, 252p NASA-CP-2070
Conf-Workshop Held at Wallops Island, VA., 2-4 May 1978; Sponsored in Part by US Dept. Of Agriculture.

Descriptors: *Ecology, *Insects, Radar, Atmospheric effects, Management, Meteorology, Motion, Project planning, Remote sensors, Scientists, Systems analysis.
Identifiers: Animal populations.

For abstract, see STAR 1710

PB-293 167/3GA PC **A14**/MF **A01**
Illinois Univ. at Urbana-Champaign. Inst for Environmental Studies.
Design and Evaluation of a Terrestrial Model Ecosystem for Evaluation of Substitute Pesticide Chemicals.
Final rept. Jul 74-Sep 77,
Robert L. Metcalf, Larry K. Cole, Susanne G. Wood, Douglas J. Mandel, and Mary L. Milbrath. Jan 79, 308p EPA/600/3-79/004
Grant EPA-R-803249
Prepared in cooperation with Illinois Natural History Survey, Urbana.

Descriptors: *Pesticides, *Mathematical models, *Ecosystems, Isotopic labeling, Soils, Substitutes, Cost analysis, Chlorine organic compounds, DDT, Dieldrin, Microorganisms, Aldrin, Phosphorus organic compounds, Nitrogen organic compounds, Concentration(Composition).
Identifiers: *Environmental chemical substitutes, Dyfonate, Path of pollutants, Methoxychlor, Benzene/nitro-pentachloro, Pherol/pentachloro, Captan, T 2-4-5 herbicide, Simazine, Parathion, Methyl parathion, Benzene/hexachloro, Phorate, Trifluoralin.

This grant was established to design a terrestrial model ecosystem that was simple, inexpensive, and suitable for examining the total environmental fate of radiolabeled pesticides in a soil crop model e.g. soil-corn or soil-soybean. This was accomplished with the practical development of a system in which corn or soybeans are grown on 3 kg of typical Illinois soil types contained in a 19 1 wide-mouth glass carboy fitted with airtight lid and impingers to sample pesticide content in aspirated air, and a bottom petcock to sample leachate water. The units are housed in an environmental growth chamber under 12 hours simulated daylight, at 26C. Emphasis was placed on tracing the fate of the pesticide chemical and its degradation products in soil, air, water, phytoplankton and in the major food chain organisms of the model ecosystems, e.g. Zea mays, Glycine max, Lumbricus terrestris, Limax maximus, Armadillidium vulgare, Estigmene acrea, and Microtus ochregaster in the soil-plant phase; and Daphnia magna, Culex pipiens quinquefasciatus, Physa spp., and Gambusia affinis in the leachate water. The 14C-labeled pesticides examined included DDT, methoxychlor, aldrin, dieldrin, fonofos, phorate, parathion, methyl parathion, simazine, trifluralin, 2,4,5-T isooctyl ester, hexachlorobenzene, pentachlorophenol, pentachloronitrobenzene, and captan. Detailed summaries of their fate and degradation, based on more than 20,000 analyses, are presented.

PB-293 422/2GA PC **A05**/MF **A01**
Lake Champlain Basin Study, Burlington, VT.
Assessment of the Physical and Biological Characteristics of the Major Lake Champlain Wetlands.
Final rept.,
Gerhard K. Gruendling, and Donald J. Bogucki. May 78, 92p LCBS-05
Prepared by State Univ. of New York Coll. at Plattsburgh. Report on Lake Champlain Basin Study.

Descriptors: *Swamps, *Marshes, *Ecology, *Lake Champlain Basin, Hydrology, Topography, Aquatic plants, Vegetation, Wildlife, Trees(Plants), Shrubs, Geomorphology, Classifications, New York, Vermont.
Identifiers: *Wetlands, Habitats, Plant associations, Water levels.

This report summarizes the various descriptive data presently available on Lake Champlain wetlands. The United States portion of the wetlands consists of approximately 32,000 acres of swamps, marshes and shallow bays, constituting forty-two separate areas of 50 acres or larger. The total acreage of the wetlands, the extent and distribution of the biological components, and the ecological relationships between the wetland components and the naturally fluctuating water levels of the Lake are reviewed. The wetland's physical characteristics, are discussed.

PB-293 439/6GA PC **A06**/MF **A01**
Lake Champlain Basin Study, Burlington, VT.
Nuisance Aquatic Plants in Lake Champlain.
Final rept.,
W. D. Countryman. Oct 78, 112p LCBS-23
Prepared by Aquatec, Inc., South Burlington, VT. Report on Lake Champlain Basin Study.

Descriptors: *Aquatic weeds, *Weed control, *Lake Champlain, Management, Project planning, Aerial surveys, Harvesting, Herbicides, Chlorine aromatic compounds, Copper sulfates, Drawdown, Flooding, Public law, Licenses, Cost estimates, New York, Vermont.

Identifiers: Myriophylleon spicatum, Trapa natans, Nymphoides peltatum, D 2-4 herbicide, Acetic acid/dichlorophenoxy.

This technical report documents the extent of the weed problem, in Lake Champlain, discussing in detail the nature of the water chestnut, yellow floating heart, and Eurasian milfoil, now and in the future. It studies and evaluates the potential management solutions, and recommends immediate action to stop the spread of these plants. Current programs, policies and plans of state, Federal and Canadian agencies for management of aquatic plants are described. Management alternatives are reviewed, and recommended actions, including cost estimates, are presented.

PB-293 478/4GA PC **A10**/MF **A01**
Montana Agricultural Experiment Station, Bozeman.
The Effects of Stack Emissions on the Range Resource in the Vicinity of Colstrip, Montana: Pre-Operational Description of the Range Ecosystem,
Frank F. Munshower, Edward J. DePuit, and Dennis R. Neuman. 1977, 209p
See also report dated Nov 76, PB-269 120. Sponsored in part by Montana Power Co., Butte, Department of Energy, Washington, DC., and Environmental Protection Agency, Washington, DC. Prepared in cooperation with Montana State Univ., Bozeman. Dept. of Animal and Range Sciences.

Descriptors: *Flue gases, Sites, Electric power plants, Soils, Plants(Botany), Nickel, Lead(Metal), Manganese, Copper, Zinc, Air pollution, Industrial wastes, Combustion products, Ecology, Sulfur, Fluorides, Cadmium, Selenium, Molybdenum, Trace elements, Tissue extracts, Concentration(Composition), Montana.
Identifiers: *Coal fired power plants, Colestrip(Montana), *Air pollution effects(Plants), *Air pollution effects(Animals), Ecosystems, Alfalfa.

In 1972, Montana State University was contracted by the Montana Power Company to begin a study of the range resource in the vicinity of proposed coal-fired power plants at Colstrip, MT. The aims of the study were: (1) Determine the effect of potential emissions upon range forage and crop production; (2) Isolate, identify, and quantify contaminants occurring in important plant species and in the soil system; (3) Identify major vegetative accumulators of certain potentially toxic emission including fluoride, mercury, etc.; and, (4) Identify and quantify the effects of emissions on the physiology of various classes of major plant species. The pre-operational phase of this study was completed in 1976. This report summarizes the physical and chemical data describing the rangeland ecosystem surrounding Colstrip prior to on-line operation of units I and II at the power plant site.

PB-293 506/2GA PC **A04**/MF **A01**
University of Southern California, Los Angeles. Dept. of Pathology.
Survey for Airborne Nitrosamines.
Final rept. Feb 77-Jun 78,
Robert J. Gordon. Jun 78, 75p ARB-R-A6-096-30-78-93
Contract N01-CP-5-3500

Descriptors: *Air pollution, *Carcinogens, *Environmental surveys, Amines, Nitroso compounds, Surveys, Sampling, Methodology, Emission, Malignant neoplasms, Properties, Recommendations, Synthesis(Chemistry), Seasonal variations, Oxides.
Identifiers: *Nitrosamines, Los Angeles County(California), Contra Costa County(California), Hollister(California), Cancer, Air sampling.

A survey for airborne volatile nitrosamines was carried out in Los Angeles and Contra Costa Counties and at a rocket fuel plant near Hollister, California. A mobile sampling unit with ambient aqueous KOH bubblers was used, followed by extraction, concentration, and analysis by gas chromatography with thermal energy analysis detection. The detection is based on decomposition of nitrosamines to NO which gives chemiluminescence upon reacting with ozone. Low levels of dimethyl and diethylnitrosamine were observed sporadically at numerous locations but gave no clear indication of significant point sources. Most samples were below 0.03 micrograms/cu m while the highest reached 1.0 micrograms/cu m. Temporal patterns showed morning and evening maxima and suggested photolysis in midday sun. No relationship between airborne nitrosamine levels by area and incidence of several human cancers is apparent.

6G. Escape, Rescue, and Survival

AD-A065 118/2GA PC **A07**/MF **A01**
Analysis and Technology, Inc., North Stonington, CT.
Analysis of Visual Detection Performance (Fall 1978 Experiment).
Interim rept. Jan-Dec 78,
N. C. Edwards, Jr., T. J. Mazour, D. B. Bouthilette, and S. R. Osmer. Dec 78, 132p
USCG-D-03-79
Contract N00014-78-C-0810

Descriptors: *Visual surveillance, *Search and rescue, Visual targets, Target detection, Surface targets, Microwaves, Range finding, Performance tests, Logistics, Models, Airborne, Shipboard.

From 11 September 1978 to 6 October 1978 a visual detection experiment was conducted in Block Island sound by the U.S. Coast Guard Research and Development Center. It was the first in a series of experiments designed to improve search planning guidance contained in the National Search and Rescue Manual. This was a controlled experiment involving 82 and 95 foot cutters, 41 and 44 foot boats, helicopters, and fixed wing aircraft searching for white 16 foot boat targets anchored at predetermined locations within the search area. Through the use of a microwave ranging system, the positions of searchers and targets could be accurately reconstructed to determine the lateral range of targets that were detected, as well as targets not detected. Thus, probability of detection versus lateral range curves could be developed, and, by integrating these curves, sweep width could be determined as well. A total of 695 detection opportunities were generated. A sophisticated binary multivariate logistic regression computer program was used to develop sweep width estimates for the environmental conditions experienced. Of the eight visual detection parameters investigated, visibility, wind speed, swell height, cloud cover, search unit type, and duration of search were determined to have a significant effect on sweep width. The sweep width is an excellent measure of search unit performance. A more rapid degradation of sweep width was found for deteriorating environmental conditions than is now predicted by the National Search and Rescue Manual. The methods used to conduct this experiment and analyze the data were found to be successful, and are recommended for future experiments.

PB-293 258/0GA PC **A03**/MF **A01**
National Transportation Safety Board, Washington, DC. Bureau of Plans and Programs.
Emergency Locator Transmitters: An Overview.
Special study rept.
26 Jan 78, 34p NTSB/AAS-78/1

Descriptors: *Transmitters, *Crash locator beacons, Radio beacons, Rescue beacons.
Identifiers: Emergency locator beacons.

The report includes a review of emergency locator transmitter (ELT) problems and efforts to solve these problems, and a survey of the current situation. Statistical data from the National Transportation Safety Board and the Air Force Rescue Coordination Center for 1975 and 1976 is used in this study. Numerous discussions were held with a substantial segment of the ELT and search and rescue community, including those organizations specifically addressing the current ELT problems. Further, an intensive review of the ELT resource literature was completed, including technical papers, general articles, and communications from many of those organizations concerned with the ELT and search and rescue.

6H. Food

N79-19686/1GA PC **A11**/MF **A01**
Massachusetts Inst. of Tech., Cambridge. Dept. of Nutrition and Food Science.
Mechanisms of Deterioration of Nutrients.
Annual Report, 13 Mar. 1976 - 13 May 1978.
M. Karel, and J. M. Flink. 1978, 239p NASA-CR-160128
Contract NAS9-12485

Descriptors: *Deterioration, *Freeze drying, *Frozen foods, *Nutrients, Dehydration, Microstructure, Osmosis, Quality, Upgrading.

For abstract, see STAR 1710

PB-293 396/8GA PC **A02**/MF **A01**
Economics, Statistics, and Cooperative Service, Washington, DC. National Economic Analysis Div.
Do Food Stamp and Other Customers Buy the Same Products in Supermarkets.
Agricultural economic rept. (Final),
Paul E. Nelson. Mar 79, 23p AER-421

Descriptors: *Food, *Purchasing, Comparison, Surveys, Meat, Poultry, Fishes, Food habits, Food consumption.
Identifiers: Food stamps, Food stamp program.

Food purchases of food stamp and all other customers, including those eligible for but not participating in the Food Stamp Program, are compared. Both groups allocated greater proportions of their food purchases to meat, poultry, and fish than did USDA's Thrifty Food Plan. The food stamp and other groups allocated similar proportions of their food dollar among the various food product groups, although food stamp customers spent more per shopping trip for 22 of the 27 food products surveyed. Neither group bought foods giving them the greatest nutrition per dollar spent.

PB-293 582/3GA PC **A02**
Georgia Univ., Brunswick. Marine Extension Service.
Recovery of By-Products from Seafood Effluents,
Wayne A. Bough, and Brian E. Perkins. Oct 77, 10p NOAA-79020601
Grant NOAA-4-7-158-44126
Pub. in Proceedings of the Interstate Seafood Seminar Held at Hampton, Virginia on October 4-7, 1977, p201-213.

Descriptors: *Waste disposal, *Shrimps, *Food processing, Byproducts, Recovery, Proteins, Seafood, Waste water, Feeding stuffs.
Identifiers: Sea Grant program.

Recovery of by-products will become an economic necessity for seafood processors who try to defray the costs of complying with stringent environmental regulations. Shrimp blanch water, the liquid in which the shrimp are briefly cooked prior to canning and retorting, has been shown to contain 43 g of dissolved and suspended protein per gallon. The nutritional characteristics of shrimp blanch protein, after recovery by simple acid precipitation and preliminary centrifugation, are noteworthy. Analyses have shown that shrimp blanch protein contains approximately 59% protein, and has a gross energy value of 5170 cal/g. Further, the shrimp protein has very little ash when compared to dried fish meals. In addition to the overall attributes of shrimp blanch protein, several specific compounds of nutritional importance have been noted in significant quantities. These examples of by-products from seafood effluents hold some economic promise and others appear to be only academic interest.

PB-294 139/1GA PC **A03**/MF **A01**
Institucion No Lucrativa Al Servicio de la Iniciativa Privad, San Pedro (Argentina).
Design of a Factory for the Productivity of Tomato Paste,
Ing. Walter Huppke, Guillermo Medina Santos, and S. E. White. 1962, 32p
Sponsored in part by Agency for International Development, Washington, DC.

Descriptors: *Food processing, *Tomatoes, *Industrial plants, Machinery, Sanitation, Production

capacity, Production methods, Cost estimates, Farm processing, Developing countries, Operating costs, Labor estimates, Industrial management, Production planning, Technical assistance.
Identifiers: Developing country application.

The report is a complete study of the various factors which enter into the economic aspects of a tomato products industry.

6J. Industrial (Occupational) Medicine

PB-289 582/9GA MF **A01**
Bureau of Labor Statistics, Washington, DC.
Occupational Injuries and Illnesses, Wisconsin, 1976.
Final rept. for 1976.
1978, 1567p BLS/SDS/WI-76
Microfiche copies only.

Descriptors: *Data file, *Industrial medicine, *Occupational diseases, *Industrial accidents, *Wisconsin, Records, Injuries, Occurrence, Time, Industries, Tables(Data).
Identifiers: Environmental health, *Occupational safety and health, Illnesses, Supplementary Data System, Health statistics.

Microfiche of standard tabulations produced by the Supplementary Data System (SDS). This document contains 46 tabulations of characteristics of occupational injuries and illnesses related to industry, occupation of the injured or ill worker related to age, and indemnity compensation and medical cost of the injury or illness. Data were compiled by the Wisconsin Department of Industry, Labor, and Human Relations from records of workers' compensation cases. Tables are based either on cases which occurred during 1976, or compensated cases closed during 1976 regardless of the date of occurrence, as indicated. Data include cases arising in public and private employments with these principal exceptions: Certain private employments with fewer than three employees; certain farmers employing fewer than six; and casual workers. In addition, Federal, railroad and maritime employments are not covered by the State act and cases involving such employees are not included in these data.

PB-290 551/1GA MF **A01**
Bureau of Labor Statistics, Washington, DC.
Occupational Injuries and Illnesses, Michigan, 1976.
Final rept. for 1976.
1979, 1143p BLS/SDS/MI-76
Microfiche copies only.

Descriptors: *Data file, *Industrial medicine, *Occupational diseases, *Industrial accidents, *Michigan, Records, Injuries, Occurrence, Time, Industries, Tables(Data).
Identifiers: Environmental health, *Occupational safety and health, Illnesses, Supplementary Data System, Health statistics.

Microfiche of standard tabulations produced by the Supplementary Data System (SDS). This document contains 28 tabulations of characteristics of occupational injuries and illnesses related to industry. Data were compiled by the Michigan Bureau of Safety and Regulations from workers' compensation reports of cases which occurred during 1976 and which resulted in death or seven or more lost workdays. Data include cases arising in private and public employments with these principal exceptions: Those employed by certain nonagricultural employers with less than three employees; those employed by agricultural employers of less than three regular employees; those employed by certain agricultural employers with three or more employees; and certain household domestic servants. In addition, Federal, railroad and maritime employments are not covered by the State act and cases involving such employees are not included in these data.

PB-290 552/9GA MF **A01**
Bureau of Labor Statistics, Washington, DC.
Occupational Injuries and Illnesses, South Carolina, 1976.
Final rept. for 1976.
1979, 828p BLs/SDS/SC-76
Microfiche copies only.

Descriptors: *Data file, *Industrial medicine, *Occupational diseases, *Industrial accidents, *South Carolina, Records, Injuries, Occurrence, Time, Industries, Tables(Data).
Identifiers: Environmental health, *Occupational safety and health, Illnesses, Supplementary Data System, Health statistics.

Microfiche of standard tabulations produced by the Supplementary Data System (SDS). This document contains 30 tabulations of characteristics of occupational injuries and illnesses related to industry, and indemnity compensation and medical costs of the injury or illness. Data were compiled by the South Carolina Department of Labor from records of workers' compensation cases which were closed during 1976 and involved eight or more lost workdays and/or medical treatment. Data include cases arising in private and public employments with these principal exceptions: Those employed by employers with less than four employees; agricultural laborers; and those whose employment is both casual and not in the course of the trade, business, profession, or occupation of their employers. In addition, Federal, railroad and maritime employments are not covered by the State act and cases involving such employees are not included in these data.

PB-290 553/7GA MF **A01**
Bureau of Labor Statistics, Washington, DC.
Occupational Injuries and Illnesses, Tennessee, 1976.
Final rept. for 1976.
1979, 1048p BLS/SDS/TN-76
Microfiche copies only.

Descriptors: *Data file, *Industrial medicine, *Occupational diseases, *Industrial accidents, *Tennessee, Records, Injuries, Occurrence, Time, Industries, Tables(Data).
Identifiers: Environmental health, *Occupational safety and health, Illnesses, Supplementary Data System, Health statistics.

Microfiche of standard tabulations produced by the Supplementary Data System (SDS). This document contains 28 tabulations of characteristics of occupational injuries and illnesses related to industry, and occupation of the injured or ill worker related to age. Data were compiled by the Tennessee Department of Labor from records of workers' compensation cases which were received during 1976 and involved eight or more lost workdays, or a permanent-partial disability. Data include cases arising in and public employments for which coverage is voluntary, and cases arising in private employments with these principal exceptions: Agricultural employees, domestic servants, casual employees, and employments with fewer than five workers, for which voluntary coverage is permitted; and employees of religious or non-profit organizations. In addition, Federal, railroad and maritime employments are not covered by the State act and cases involving such employees are not included in these data.

PB-291 385/3GA MF **A01**
Bureau of Labor Statistics, Washington, DC.
Occupational Injuries and Illnesses, Montana, 1976.
Final rept. for 1976.
1978, 748p BLS/SDS/MT-76
Microfiche copies only.

Descriptors: *Data file, *Industrial medicine, *Occupational diseases, *Industrial accidents, *Montana, Records, Injuries, Occurrence, Time, Industries, Tables(Data).
Identifiers: Environmental health, *Occupational safety and health, Illnesses, Supplementary Data System, Health statistics.

Microfiche of standard tabulations produced by the Supplementary Data System (SDS). This document contains 40 tabulations of characteristics of occupational injuries and illnesses related to industry, and indemnity compensation and medical cost of the injury or illness. Data were compiled by the Montana Department of Labor and Industry from records of workers' compensation cases. Tables are either based on cases which occurred during 1976, or closed during 1976 regardless of the date of occurrence, as indicated. Data include cases arising in private and public employments with these principal exceptions: Domestic and casual employment, family members, sole proprietors, partners, designated corporate officers, and non-wage employees. In addition, Federal, railroad and maritime employments are not covered by the State act and cases involving such employees are not included in these data.

6K. Life Support

PB-293 287/9GA PC **A02**/MF **A01**
Bureau of Mines, Pittsburgh, PA. Pittsburgh Mining and Safety Research Center.
CO2-Absorption Characteristics of Mine Rescue Breathing Apparatus.
Rept. of investigations 1979,
T. E. Bernard, N. Kyriazi, and R. L. Stein. 1979, 20p BUMINES-RI-8342

Descriptors: *Breathing apparatus, *Carbon dioxide, Absorption, Characteristics, Concentration(Composition), Design, Effectiveness, Efficiency, Methodology, Flow rate, Pressure, Temperature, Humans, Respiration, Cans, Mines(Excavations).

The CO2-absorbent canisters used in four approved rescue breathing apparatus were investigated. A breathing machine was used to simulate human expiration with gas flow rates of 26, 37, and 48 1/min of 3.5% CO2 in air. The exit-gas CO2 concentration, the pressure drop across the canister, and the exit-gas temperatures were monitored. The absorbent capacities of the packed-bed canister designs were found to be dependent on flow rate within the range studied, while the capacities of the other designs were less affected. The radial canister had the least resistance to breathing while the complex bed design proved to be the most effective in utilization of the chemical. The overall results indicated that LiOH (lithium hydroxide) has the highest capacity for CO2 absorption among the absorbents tested. It can be used in a simple packed-bed design while maintaining acceptable levels of resistance and exit-gas temperature. Examination of oxygen supply with respect to CO2-absorption capacity suggested that it is desirable to closely match CO2-absorption capacity with the available O2 supply to minimize the size and weight of rescue breathing apparatus.

6L. Medical and Hospital Equipment

AD-A065 016/8GA PC **A04**/MF **A01**
California Univ., Berkeley. School of Optometry.
Computer-Controller Ophthalmic Refraction. Analysis of a Computer Network versus a Central Computer.
Annual rept. Jun 76-Sep 77,
Elwin Marg, Jefferson Braswell, and Imsong Lee.
30 Sep 77, 65p
Contract DADA17-72-C-2044

Descriptors: *Optometry, Networks, Clinical medicine, Computer programs, Systems analysis, Cost analysis.
Identifiers: *Automation, Optical tests, *Medical computer applications, Medical equipment, *Diagnostic equipment.

This paper studies the projected organization and cost of a prototype computer-assisted eye clinic designed to supply one optometrist with an optimal flow of patients by freeing him/her from all tasks which do not require the professional skills of the optometrist. Such a system is a logical extension of the current computer refraction project, which has demonstrated the feasibility of administering many routine optometric tests under computer control. The organization and operation of the current system are presented as background for the design questions involved in the clinical prototype, and a user-oriented functional organization of the optimal system is then delineated. From these and other user requirements, a clear statement of the evaluation criteria and performance constrains for the optimal system is derived. Finally, a summary of a detailed cost study is included which appraised the cost of developing a prototype by item-

izing the hardware and software development costs for each local station in the system. To this summary of direct costs are affixed the additional costs incurred in developing and operating the prototype.

HRP-0017136/3GA PC **A16**/MF **A01**
American Coll. of Radiology, Chicago, IL.
Proceedings of the Conference on Computerized Tomography in Radiology Held at St. Louis, Missouri on April 25-28, 1976.
1976, 374p
Contract DHEW-263-76-0467

Descriptors: Data processing systems, Data processing, Diagnosis, Diagnostic agents, Health care technology, Health care, Innovations, Methodology.

This conference on computerized tomography (CT) included 46 participants, of whom 33 made formal presentations. Topics addressed during the conference are categorized as follows: (1) the state-of-the art in CT (transmission devices, changing clinical practices, the emission CT, and ultrasonic CT); (2) the implementation and application of CT (administrative and regulatory considerations); (3) educational changes necessitated by CT; and (4) further developments in CT (hardware, software, and funding). The conference presentations indicate that CT is applicable to the cranium, neck, lungs, pancreas, spleen, retroperitoneal masses, bladder, prostate, mediastinum, heart, liver, kidneys, adrenal gland, bones, joints, and breasts. The ultimate value of CT for other areas of the body, however, is not clear. It is recommended that radiologist training be continuously modified and updated to include CT in proportion to clinical applications, that radiologists and/or radiologic physicians be adequately represented in decision-making processes in the CT field, that more uniform regulations for awarded certificate of need by State and local agencies be developed, and that the American College of Radiology hold periodic conferences to review progress in the CT field.

PB-293 323/2GA PC **A06**/MF **A01**
Hartford Hospital, CT. Dept. of Medicine.
Transmission of Electrocardiograms for Computer Analysis: Part I. A Community Resource for Automated Electrocardiographic Analysis: Part II.
Final rept. 1 May 65-30 Jun 70,
Robert J. Dobrow, Arnold Fieldman, and Ralph F. Reinfrank. 1970, 110p NCHSR-79/92
Portions of this document are not fully legible.

Descriptors: *Electrocardiograms, *Transmission, Automation, Communities, Hospitals, Data processing, Analyzing, Feasibility studies, Telecommunication, Data acquisition, Diagnosis, Computers.
Identifiers: *Telemedicine, *Medical computer applications, Health services research, Health care technology, Communication networks.

The primary objective was to demonstrate within the setting of a large community hospital the application of recent advances in the automatic analysis and processing of ECGs. It was intended to establish a communications link by phone and by mail (and subsequently by teletype between the Hartford Hospital and a remote computer facility located at the Instrumentation Field Station of the Heart Disease Control Program, Washington, D.C. ECGs recorded in the Hartford Hospital would be transmitted to Washington via telephone and be re-recorded there for processing by computer. Measurements of each ECG along with a diagnostic classification would be printed automatically and mailed to the hospital. A system was planned to provide immediate 'on-line' computer reports for ECGs recorded in the Hartford Hospital Emergency Room.

PB-293 510/4GA PC **A04**/MF **A01**
Aerojet Liquid Rocket Co., Sacramento, CA.
Development of an Electrical Energy Converter for Driving Left Heart Assist Blood Pumps.
Annual rept. Oct 77-Jun 78,
K. C. Butler, W. Carriker, J. Dever, J. W. Hellwig, and J. C. Hoffman. 15 Jun 79, 60p 9290-1-79, NIH-N01-HV-7-2971-1
Contract N01-HV-7-2971

Descriptors: *Mechanical hearts, *Electric converters, Mechanical organs, Development, In vitro analysis, Performance evaluation, Implantation, Power supplies, In vivo analysis, Tests, Experimental data.
Identifiers: *Blood pumps, Left ventricular assist devices, *Cardiac assist devices.

The objective of this program is the development of an electrical energy converter for incorporation in a left heart assist system suitable for human use. The current three year program involves development up to the pre-clinical phase. The converter utilizes hydraulic actuation and control with fluid supplied by an electric motor driver pump. The approach features modular components which can be packaged in the most appropriate manner for anatomic fit with a given blood pump and implant location. The converter is hermetically sealed and compatible with the body fluid environment. At this time component design and fabrication are complete with in vitro testing underway on most components.

6M. Microbiology:

AD-A065 098/6GA PC **A02**/MF **A01**
EMV Associates, Inc., Rockville, Md.
Pattern Recognition of Bacteria Using Scanning Electron Microscopy and Materials Analysis.
Final rept. 15 Apr 76-31 Dec 78,
James H. McAlear, Benjamin J. Veltri, William M. Hanusiak, and John M. Wehrung. 15 Jan 79, 20p ARO-13841.1-LX
Contract DAAG29-76-C-0024

Descriptors: *Bacteria, *Microbiological tests, *Pattern recognition, Identification, Images, Classification, Salmonella enteritidis, Shigella sonnei.
Identifiers: Electron microscopy, Medical computer applications.

A need for rapid characterization of bacteria for prompt clinical diagnosis and early warning of unusual bacteria in the atmosphere has prompted a number of different approaches to attempt to circumvent the usual time-consuming tedious procedures commonly employed. None appear to have been very successful. In the present case, state-of-the-art scanning electron microscopy (SEM), energy dispersive x-ray analysis (EDXA) and automated image analysis by computer were employed in a survey of thirteen species of bacteria. The organisms were first cultured and cloned to check for mutants or other contaminants and were then fixed, stained and dispersed, free of debris on a structure-free background. Next, the magnification and other SEM operating conditions were controlled, and the binary image in the secondary electron mode was made to correspond to the grey scale image. Finally, the computer printout of each individual organism was checked with the binary image to pick up inconsistencies in the data arising from the characteristics of the stereologic based program. The computer data for the mean width and average length were plotted on a ternary diagram. After the protocol was established and the variables controlled in each sample, about 100 organisms were measured and then the entire procedure was duplicated to determine reproducibility. In three runs on thirteen organisms, the reproducibility was generally around 1%, easily sufficient to characterize each organism. This preliminary study indicates a feasibility that the enterics and other bacteria of interest to man could be rapidly identified by their genetically characteristic morphology.

AD-A065 271/9GA PC **A02**/MF **A01**
Naval Medical Research Inst., Bethesda, MD.
Biological Properties of 'Rickettsia prowazekii' Strains Isolated from Flying Squirrels.
Medical research progress rept.,
Daniel R. Woodman, Emilio Weiss, Gregory A. Dasch, and F. Marilyn Bozeman. 26 Jan 77, 10p
Availability: Pub. in Infection and Immunity, v16 n3 p853-860 Jun 77.

Descriptors: *Rickettsia prowazekii, Erythromycin, Squirrels, Rickettsia typhi, Florida, Virginia, Canada, Comparison, Resistance(Biology), Reprints.
Identifiers: Rickettsia canada, Rickettsia akari.

No abstract available.

AD-A065 373/3GA PC **A02**/MF **A01**
Connecticut Univ. Health Center, Farmington. Dept. of Biochemistry.
Levels of Cyclic GMP in Dormant, Germinated, and Outgrowing Spores and Growing and Sporulating Cells of 'Bacillus megaterium'.
Barbara Setlow, and Peter Setlow. 16 Jun 78, 5p ARO-14479.5-L
Grant DAAG29-77-G-0070
Availability: Pub. in Jnl. of Bacteriology, v136 n1 p433-436 Oct 78.

Descriptors: *Bacillus, *Germination, Spores, Growth(General), Reprints.
Identifiers: *Bacillus megaterium, Cyclic GMP, Bacteria.

No abstract available.

AD-A065 380/8GA PC **A02**/MF **A01**
Naval Medical Research Inst., Bethesda, MD.
Biological Properties of Rickettsiae.
Medical research progress rept.,
E. Weiss. 1978, 19p Rept no. NMRI-78-92
Availability: Pub. in Rickettsiae and Rickettsial Diseases, p137-153 1978.

Descriptors: *Rickettsia, *Biology, Metabolism, Cells(Biology), Reprints.
Identifiers: Rickettsiae.

No abstract available.

AD-A065 381/6GA PC **A02**/MF **A01**
Naval Medical Research Inst., Bethesda, MD.
Relationship Between Glutamate Metabolism and the Incorporation of Inorganic Phosphate (P1) into Nucleotides by 'Rickettsia typhi'.
Medical research progress rept.,
J. C. Williams, J. C. Peterson, and J. C. Coolbaugh. 1978, 18p Rept no. NMRI-78-91
Availability: Pub. in Rickettsia and Rickettsial Diseases, p99-113 1978.

Descriptors: *Rickettsia typhi, *Enzymes, Metabolism, Purification, Reprints.

No abstract available.

AD-A065 382/4GA PC **A02**/MF **A01**
Naval Medical Research Inst., Bethesda, MD.
Factors Affecting the Viability of 'Rickettsia tsutsugamushi' Purified from Yolk Sacs and L Cells.
Medical research progress rept.,
G. A. Dasch, and E. Weiss. 1978, 15p Rept no. NMRI-78-90
Availability: Pub. in Rickettsiae and Rickettsial Diseases, p115-127 1978.

Descriptors: *Rickettsia tsutsugamushi, Preparation, Viability, Purification, Reprints.
Identifiers: Cells(Biology).

No abstract available.

PB-293 209/3GA PC **A03**/MF **A01**
Maryland Univ., College Park. Water Resources Research Center.
Detection of Enteroviruses and Bacterial Pathogens Surviving Standard Sewage Treatment.
Completion rept. Jul 75-Sep 77,
Frank M. Hetrick. Jan 79, 40p TR-53, W79-05090, OWRT-A-035-MD(1)
Contract DI-14-34-0001-6021
Prepared in cooperation with Maryland Univ., College Park. Dept. of Microbiology.

Descriptors: *Enteroviruses, *Sewage treatment, *Bacteria, *Dialysis, Viruses, Detection, Effluents, Filtration, Survival, Concentration(Composition), Water pollution, Evaluation, Experimental data, Pathogenic microorganiems, Adsorption.
Identifiers: *Pathogens, Ultrafiltration, *Water pollution detection.

A commercially available dialysis unit, the Amicon DC-30 Diaflo unit, was evaluated for its utility in concentrating enteric viruses and bacteria from the effluents of a sewage treatment plant. The unit's efficiency for virus recovery was evaluated by seeding tap water samples with enteroviruses and then refining the concentration procedure so

that acceptable virus recovery (>25%) was attained. However, many difficulties were encountered when sewage effluents were examined, most notably the poor flow rates and the poor virus recovery. The particulate matter present in the effluent apparently adsorbs much of the virus that is present which is then removed with the suspended solids as the sample passes through the unit. The bacterial quality of the effluents was surprisingly good with coliform counts of some samples meeting recreational water standards, however, Shigella, Salmonella, Klebsiella, and Proteus species were occasionally isolated from the effluents. Major conclusions are (a) the Amicon DC-30 unit has only limited application for the concentration of enteroviruses from sewage effluents due to poor virus recovery rates and (b) the occasional isolation of viruses and pathogenic bacteria from the effluents indicates that some pathogens survive secondary sewage treatment.

6O. Pharmacology

AD-A065 232/1GA PC **A02**/MF **A01**
Naval Medical Research Inst., Bethesda, MD.
Synthesis and Biological Properties of some Spin-Labeled 9-Aminoacridines.
Medical research progress rept.,
Birandra K. Sinha, Richard L. Cysyk, David B. Millar, and Colin F. Chignell. 22 Dec 75, 7p
Availability: Pub. in the Jnl. of Medicinal Chemistry, v19 n8 p994-998 1976.

Descriptors: *Acridines, *Drugs, Chemical analogs, Synthesis(Chemistry), Toxicity, Spin states, Escherichia coli, Inhibition, Deoxyribonucleic acids, Ribonucleic acids, Reprints.
Identifiers: *Aminoacridines.

No abstract available.

PB-293 294/5GA PC **A03**/MF **A01**
Utah Univ., Salt Lake City. Dept. of Pediatrics.
Antiviral Substances and Animal Systems.
Annual progress rept. Jun 76-77,
Lowell A. Glasgow, James C. Overall, and Earl R. Kern. 6 Apr 77, 49p DAB-ASP-06-16
Contract N01-AI-4-2524
See also report dated 31 Mar 76, PB-263 231.

Descriptors: *Antiviral agents, *Drugs, Viral diseases, Herpetic viruses, Mice, Laboratory animals, Experimental data.
Identifiers: *Interferon, *Animal models, Herpesvirus hominis, Semliki Forest virus, Cytomegaloviruses, Encephalomyocarditis virus.

Partial Contents:
- Effect of treatment with E. coli protein (ECP) on Encephalomyocarditis (EMC) virus, Semliki Forest virus (SFV), and Herpesvirus hominis type 2 (HVH-2) infections of mice;
- Effect of 5-tungsto-2-antimoniate (HPA-23) on EMC virus, SFV, and HVH-2 infections of mice;
- Effect of pretreatment with an extract of mycobacterium butyricum (Wax D) on EMC (VR129) virus and HVH-2 infections of mice;
- In vitro sensitivity of various viruses to C. simplex and F. mollis in tissue culture;
- Effect of treatment with PAA, ara-A, or ara-AMP on a genital HVH-2 infection of mice;
- Effect of treatment with PAA on type 1 and type 2 genital HVH infection of mice;
- Effect of treatment with PAA, ara-A, or ara-AMP on the mortality and pathogenesis of infection in mice inoculated by the intracerebral, intraperitoneal, and intranasal routes.

PB-293 508/8GA PC **A03**/MF **A01**
Saint Louis Univ., MO.
Clinical Investigation of Techniques to Protect Ischemic Myocardium and Minimize Infarct Size.
Annual rept. 30 Jun 77-15 Apr 78,
Hiltrud S. Mueller. 26 Apr 78, 30p NIH-N01-HV-62960-1-78
Contract N01-HV-6-2960-1
See also report dated 22 Apr 77, PB-279 604.

Descriptors: *Ischemia, *Myocardial infarction, *Cardiovascular diseases, *Cardiovascular drugs, Humans, Experimental data, Dosage, Dose rate, Adrenergic blocking agents, Drug therapy, Metabolism, Pharmacology, Evaluation.
Identifiers: *Propranolol.

A randomized double blind study is being performed to evaluate the effects of propranolol on infarct size. The coronary care units of three major hospitals were standardized in terms of equipment and personnel in order to perform myocardial imaging with radionuclides and placement of intracardiac catheters at the bedside. A patient registry was initiated. Since the beginning of the study 61 patients could be enrolled. Propranolol was tolerated well by initial intravenous administration (0.1 mg/kg) and by oral medication over 10 days (average dose 50 mg q6h). Hemodynamic data indicate that propranolol decreased cardiac work mainly by decreasing heart rate, to a lesser degree by decreasing contractility. Infarct size was determined by enzymatic method using the cardiac specific isoenzyme, creatine kinase MB (CK-MB), and by radionuclide methods using thallium perfusion and pyrophosphate scanning and physiologically gated blood pool scanning. Infarct sizes determined by CK-MB and by thallium perfusion scannig correlated wells. Follow-up studies were performed in 74 patients. The compliance of follow-up was 100%.

PB-293 607/8GA PC **A02**/MF **A01**
Texas Univ. Medical Branch at Galveston. Dept. of Pharmacology.
Influence of Cholinergic Stimuli on Cyclic Nucleotide Levels and Glycogen Metabolism during Myocardial Ischemia.
Final scientific rept. 30 Jun 75-15 Oct 78,
Betty J. Williams. 15 Oct 78, 22p
Contract N01-HV-5-2996
See also report dated 1 Apr 77, PB-279 659.

Descriptors: *Ischemia, *Myocardial infarction, *Cardiovascular diseases, *Autonomic agents, Norephinephrine, Anoxia, Dogs, Rabbits, In vivo analysis, Nitrogen, Respiration, Physiological effects, Laboratory animals, Biochemistry, Organic phosphates, Glycogens, Pharmacology, Nucleotides, Electrocardiography, Atropine, Phentolamine, Adrenergic blocking agents, Drugs.
Identifiers: Adenylic acids, Guanylic acids, Propranolol.

Experiments were performed using anesthetized rats, anesthetized dogs or isolated perfused rabbit hearts. Early experiments in rats indicated that, in general, procedures which decreased glycogen loss decreased cardiac damage from anoxia or extreme catecholamine stimulation. In dogs subjected to left anterior descending coronary artery occlusion, no autonomic intervention was effective in restoring cardiac function. After shorter periods of LAD occulusion, antgonism of adrenergic influences benefited, while cholinergic antagonism exacerbated damage. Glycogen loss, occurred in dog hearts during coronary occlusion, but was not limited to the ischemic area. Surprisingly. Cyclic AMP and GMP concentrations in non-ischemic areas were greater than seen in tissues fed by the LAD. Ischemia was produced in rat hearts in vivo by ligation of pulmonary artery and vein. No autonomic intervention prevented glycogen loss during ischemia, but adrenergic inhibition or cholinergic stimulation enhanced cardiovascular recovery. Isolated rabbit hearts showed results similar to that seen in dogs in vivo. It is concluded that maintenance of cardiac glycogen, while associated with beneficial effects, is not directly related to restoration of function.

6P. Physiology

AD-A064 886/5GA PC **A02**/MF **A01**
Army Research Inst. of Environmental Medicine, Natick, MA.
Changes in Aerobic Fitness and Body Fat during Army Recruit Training,
J. A. Vogel, J. P. Crowdy, A. F. Amor, and D. E. Worsley. 16 Jun 78, 11p Rept no. USARIEM-MISC-78
Availability: Pub. in European Jnl. of Applied Physiology and Occupational Physiology, v40 p37-43 1978.

Descriptors: *Physical fitness, Recruits, *Army training, Fat cells, Fats, Human body, Oxygen consumption, Body weight, Reprints.
Identifiers: *Aerobic fitness.

No abstract available.

AD-A064 891/5GA PC **A02**/MF **A01**
Army Research Inst. of Environmental Medicine, Natick, MA.
Aerobic Fitness and Body Fat of Young British Males Entering the Army,
J. A. Vogel, and J. P. Crowdy. 12 Oct 78, 16p Rept no. USARIEM-MISC-79
Availability: Pub. in European Jnl. of Applied Physiology, 40 p73-83 1979.

Descriptors: *Physical fitness, *Army training, Recruits, Human body, Body weight, Males, Great Britain, Fat cells, Fats, Reprints.
Identifiers: *Aerobic fitness.

No abstract available.

AD-A064 912/9GA PC **A04**/MF **A01**
Boeing Co., Seattle, WA.
The Effects of Pilot Age, Lighting, and Head-Down Time on Visual Accommodation,
C. Larry, and C. Elworth. 6 Feb 79, 68p Rept no. D162-10378-1-TN

Descriptors: *Visual acuity, *Visual perception, *Aging(Physiology), Pilots, Performance(Human), Test methods, Test and evaluation, Eye movements, Physiological effects.

The study discussed in this report is exploratory. It was undertaken to (1) determine the effects which age, lighting and the duration of near vision tasks have on visual accommodation; and (2) obtain vision data which could be applied to improve aircrew utilization and crew station design. The results indicated the ability to focus the eyes at infinity following the performance of near vision tasks decreases with age; and eye focussing time is related to the duration of the near vision task, and with some exceptions, increases with increase in near vision task time. Further study, utilizing larger sample sizes, is required to verify these preliminary conclusions and expand their usefulness to crew station designers. (Author)

AD-A064 919/4GA PC **A02**/MF **A01**
Naval Health Research Center, San Diego, CA.
Circadian Variation in Performance, Subjective Sleepiness, Sleep, and Oral Temperature During an Altered Sleep-Wake Schedule,
J. Moses, A. Lubin, P. Naitoh, and L. C. Johnson. 23 May 78, 11p Rept no. NAVHLTHRSCHC-78-2
Availability: Pub. in Biological Psychology, v6 p301-308 1978.

Descriptors: *Sleep, *Circadian rhythms, *Performance(Human), Males, Naval personnel, Scaling factors, Reprints.

No abstract available.

AD-A065 187/7GA PC **A02**/MF **A01**
California Univ., Santa Barbara. Inst. of Environmental Stress.
Hemodynamic Changes as a Function of Classical Aversive Conditioning in Human Subjects,
Jeffrey A. Gliner, Andrew C. Browe, and Steven M. Horvath. 23 Oct 75, 8p AFOSR-TR-77-0812
Grants AFOSR-73-2455, PHS-AG-00021
Availability: Pub. in Psychophysiology, v14 n3 p281-286 May 77.

Descriptors: *Heart rate, Measurement, Monitoring, Test methods, Reprints.
Identifiers: *Hemodynamics, Humans.

No abstract available.

AD-A065 332/9GA PC **A03**/MF **A01**
Army Research Inst. of Environmental Medicine, Natick, MA.
The Effects of Dehydration on Peripheral Cooling,
J. J. Berberich, Donald E. Roberts, and R. E. Droege. 18 Jul 78, 32p Rept no. USARIEM-M-2/79

Descriptors: *Dehydration, *Body temperature, *Exercise(Physiology), Hands, Body weight, Physiological effects.
Identifiers: Males.

Ten men were dehydrated by voluntary restriction of fluid intake and by mild exercise over a 2 1/2 day period (body weight loss: 4.6%). Body weight returned to -1.6% and -0.3% of their starting weight 10 and 20 hours after rehydration, respectively, suggesting the weight loss was fluid loss. Measures of blood and urine constituents also were supportive of dehydration. These 10 experimental subjects experienced a standard cold test prior to and after dehydration and after rehydration. The standard cold test consisted of sitting in a cold chamber (0 C) dressed in cold weather clothing with right hand bare for 2 hours. The fingers, but not the back of the hand, of the experimentals were significantly (18%) colder following dehydration and were slightly warmer following initial rehydration. A group of 10 control subjects tested under identical conditions, but hydrated at all times, showed no changes. (Author)

AD-A065 349/3GA PC **A02**/MF **A01**
Naval Medical Research Inst., Bethesda, MD.
The Influence of pH on the Sex-Related Differences in Renal Organic Ion Transport.
Medical research progress rept.,
A. Small, L. D. Homer, and R. S. Ide. 29 Nov 77, 4p Rept no. NMRI-78-85
Availability: Pub. in Experientia, v34 p1315-1316 1978.

Descriptors: *Physiology, *Kidneys, *pH factor, Ion exchange, Sex, Reprints.

No abstract available.

AD-A065 450/9GA PC **A03**/MF **A01**
Letterman Army Inst. of Research, San Francisco, CA.
Effects of Exercise and Dietary Protein Levels on Body Composition in Humans,
Harry J. Krzywicki, C. Frank Consolazio, Herman L. Johnson, and Norman F. Witt. Jul 78, 27p
Rept no. LAIR-62

Descriptors: *Proteins, *Exercise(Physiology), Diet, *Human body, Humans, Potassium, Nitrogen.
Identifiers: Experimental data.

Two levels of protein (200 and 100 gm/day) were fed to two groups of young adults who exercised strenuously for 40 days. From body volume, total body water mass, 40 K whole body counting, and potassium balances, it was determined that the 2.10 kg gain in body weight in Group I subjects (200 gm of protein/day) reflected 0.67, 2.42, and 0.22 kg gains of dry protein, water, and mineral, respectively, with a 1.21 kg loss of body fat. Lesser gains of 0.39 kg of dry protein, 1.46 kg of body water, and 0.13 kg of mineral were observed in Group II, with a 1.09 kg loss of body fat. Minimal changes were noted in several anthropometric girths, and arm and scapular skinfolds. Although higher dietary intakes resulted in small increments in nitrogen and potassium retentions, intakes of 100 grams of protein per day were sufficient for positive nitrogen balances and appeared to be adequate for men during strenuous physical activity. (Author)

N79-18943/7GA PC **A19**/MF **A01**
Von Karman Inst. for Fluid Dynamics, Rhode-Saint-Genese (Belgium).
Computational Fluid Dynamics, Volume 1.
1976, 428p VKI-LECTURE-Ser-87-V-1
Seri-2. Conf-Lecture Held at Rhode Saint Genese, Belgium, 15-19 Mar. 1976.

Descriptors: *Body fluids, *Computation, *Conferences, *Fluid dynamics, *Numerical analysis, *Physiology, *Transonic flow, Artificial heart valves, Blood flow, Finite element method, Navier-stokes equation, Relaxation method(Mathematics), Three dimensional flow.
Identifiers: *Meetings.

For abstract, see STAR 1710

6Q. Protective Equipment

NTIS/PS-79/0436/0GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Protective Clothing. Part 1. Arctic and Tropical Environments (A Bibliography with Abstracts).
Rept. for 1964-May 79,
Edith Kenton. May 79, 124p*
Supersedes NTIS/PS-78/0371, NTIS/PS-77/0318, and NTIS/PS-76/0267.

Descriptors: *Protective clothing, *Arctic clothing, *Tropical clothing, *Bibliographies, Cold weather survival, Environmental clothing, Human factors engineering, Comfort, Thermal insulation, Frostbite, Antarctic regions, Stress(Physiology), Tolerances(Physiology).

Reports on clothing for environmental protection in extreme climates are cited, including reports on especially developed fabrics and textiles, insulating methods, physiological and psychological responses of users, mobility and dexterity of wearers, care of specialized clothing, and human factors involved. (This updated bibliography contains 118 abstracts, 4 of which are new entries to the previous edition.)

NTIS/PS-79/0437/8GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Protective Clothing. Part 2. Fire and Radiation Environments (A Bibliography with Abstracts).
Rept. for 1964-May 79,
Edith Kenton. May 79, 108p*
Supersedes NTIS/PS-78/0372, NTIS/PS-77/0319, and NTIS/PS-76/0268.

Descriptors: *Protective clothing, *Fire fighting, *Radiation protection, *Bibliographies, Heat resistant materials, Fire safety, Flammability, Thermal environments, Fabrics, Radiation effects, Human factors engineering, Design standards, Test methods, Protection.

Research on clothing and equipment for maximum protection while fighting fires and in radiation conditions is described in the reports abstracts. Treatment of fibers and textiles, design of clothing, testing for physiological tolerances, methods of decontamination after exposure, and equipment acceptability are topics included. (This updated bibliography contains 103 abstracts, 7 of which are new entries to the previous edition.)

NTIS/PS-79/0438/6GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Protective Clothing. Part 3. Survival, Aircraft, and Combat Environments (A Bibliography with Abstracts).
Rept. for 1964-May 79,
Edith Kenton. May 79, 206p*
Supersedes NTIS/PS-78/0373, NTIS/PS-77/0320, and NTIS/PS-76/0269.

Descriptors: *Protective clothing, *Flight clothing, *Survival clothing, *Exposure suits, *Bibliographies, Camouflage, Flight crews, Combat uniforms, Life jackets, Pressure suits, Performance tests, Acceptability, Comfort, Human factors engineering, Protection.

The bibliography cites reports on design, testing, and evaluation of protective apparel for pilots in various conditions of climate and gravity, for military personnel in combat conditions, for persons in special circumstances of exposure and survival, such as the ocean environment, and for other aviation personnel. (This updated bibliography contains 200 abstracts, 7 of which are new entries to the previous edition.)

NTIS/PS-79/0439/4GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Protective Clothing. Part 4. Industrial Environments (A Bibliography with Abstracts).
Rept. for 1964-May 79,
Edith Kenton. May 79, 162p*
Supersedes NTIS/PS-78/0374, NTIS/PS-77/0321, and NTIS/PS-76/0270.

Descriptors: *Protective clothing, *Hazardous materials, *Industrial atmospheres, *Bibliographies, Shoes, Gloves, Helmets, Breathing apparatus, Fabrics, Textile finishing, Dust, Toxicity, Industrial hygiene, Accident prevention, Noise, Safety, Insect repellents.

Protective clothing for industrial atmospheres including protection from explosive materials and fuels is covered in this bibliography. Cited are studies on the design, testing, and evaluation of boots, gloves, and helmets, protection against industrial dusts, and human tolerances in the industrial environment. (This updated bibliography contains 156 abstracts, 10 of which are new entries to the previous edition.)

6R. Radiobiology

AD-A065 164/6GA PC **A06**/MF **A01**
Georgia Inst. of Tech., Atlanta. Engineering Experiment Station.
In-vivo Determination of Energy Absorption in Biological Tissue.
Final rept. 30 Jun 75-31 Dec 78,
E. C. Burdette, Fred L. Cain, and J. Seals. Jan 79, 101p ARO-13231.1-L
Grant DAAG29-75-G-0182

Descriptors: *Radiation hazards, *Tissues(Biology), Probes, Instrumentation, Energy, Electromagnetic radiation, Radiation absorption, Dielectric properties, Measurement, In vivo analysis, Electrical properties, Determination, Data acquisition, Data processing, Biological absorption.

The research efforts performed during this three-phase program have been successfully completed. Two different in-vivo probe techniques and their associated instrumentation were studied, the accuracy and repeatability of these techniques were evaluated, and a semi-automated data acquisition/data processing system was developed. One technique considered involved needle-like monopole probes of different lengths, and the second technique involved a dual-probe (two closely-spaced probes with extended center conductors) configuration. (Author)

AD-A065 226/3GA PC **A02**/MF **A01**
Illinois Inst. of Tech., Chicago. Microbial Biophysics Lab.
Relation between Radiation Resistance and Salt Sensitivity of Spores of Five Strains of 'Clostridium botulinum' Types A, B, and E,
I. Kiss, C. O. Rhee, N. Grecz, T. A. Roberts, and J. Farkas. 12 Sep 77, 8p ARO-12880.6-L
Grant DAHC04-75-G-0112
Availability: Pub. in Applied and Environmental Microbiology, v35 n3 p533-539 Mar 78.

Descriptors: *Clostridium botulinum, *Radiation resistance, Radiation effects, Sodium chloride, Salts, Sensitivity, Reprints.
Identifiers: Bacteria.

No abstract available.

AD-A065 326/1GA PC **A03**/MF **A01**
Battelle Pacific Northwest Labs., Richland, WA. Biology Dept.
Hematologic Effects in Mice Exposed to Pulsed and CW Microwaves.
Annual rept.,
H. A. Ragan, and R. D. Phillips. Feb 79, 27p
Contract N00014-76-C-1154

Descriptors: *Hematology, *Microwaves, *Radiation effects, Behavior, Physiological effects, Immunology, Bone marrow, Laboratory animals, Performance tests, Mice, Erythrocytes.
Identifiers: Exposure, Experimental data.

Mice were exposed in the far field of an anechoic chamber to 2880-MHz pulsed microwaves (2.3-microsec pulses, 100/sec) 3-7.5 hr daily for 60-360 hr. In two of five studies with 5-mW/sq cm pulsed microwaves there was a significant increase in bone marrow cellularity compared to the same-exposed groups, but in the other three exposures at 5-mW/sq cm no significant effect was observed. Significant differences were occasionally seen in erythrocyte, leukocyte and platelet measurements

from microwave-exposed groups, but were not consistently observed. The only effect seen in mice exposed to 5-mW/sq cm CW microwaves was a reduction in reticulocyte concentrations (P less than 0.02). In one of four exposures at 10-mW/sq cm pulsed microwaves, mean bone marrow cellularity was reduced (P less than 0.02) in the microwave-exposed mice, and in another group the concentration of circulating lymphocytes was increased (P less than 0.05). In only one exposure (10-mW/sq cm for 360 hr) was any effect noted on serum proteins: a reduction (P less than 0.02) to 5.1 + or - 0.29 g/dl in the exposed vs 5.6 + or - 0.36 g/dl in the sham-exposed mice. This was due to a decrease in alpha and beta-globulins, with no effect on albumin or gamma-globulin concentrations. No effect on bone marrow hematopoietic colony-forming units (CFU) was revealed by CFU-agar assay techniques following exposure of mice to 5-mW/sq cm pulsed microwaves. In 1 of 4 exposures of mice to 10-mW/sq cm pulsed microwaves there was a significant (P less than 0.05) increase in CFU-agar colonies.

NTIS/PS-79/0432/9GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Biological Effects of Microwaves. Volume 1. 1964-1977 (A Bibliography with Abstracts).
Rept. for 1964-77,
Elizabeth A. Harrison. May 79, 212p*

Descriptors: *Bibliographies, *Microwaves, *Radiation effects, *Health physics, Radiobiology, Electromagnetic radiation, Humans, Animals, Standards, Radiation dosage, Radiation tolerance, Exposure, Radiation injuries, Industrial medicine, Industrial hygiene, Abstracts.
Identifiers: Environmental health, *Occupational safety and health, Biological effects.

The selected abstracts cover the biological effects on man and animals from exposure to microwaves. In addition to dosages and tolerances, regulations, and standards are included. (This updated bibliography contains 204 abstracts, none of which are new entries to the previous edition.)

NTIS/PS-79/0433/7GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Biological Effects of Microwaves. Volume 2. 1978-May, 1979 (A Bibliography with Abstracts).
Rept. for 1978-May 79,
Elizabeth A. Harrison. May 79, 51p*
Supersedes NTIS/PS-78/0432, NTIS/PS-77/0455, NTIS/PS-76/0387, and NTIS/PS-75/384. See also Volume 1, 1964-1977, NTIS/PS-79/0432.

Descriptors: *Bibliographies, *Microwaves, *Radiation effects, *Health physics, Radiobiology, Electromagnetic radiation, Humans, Animals, Standards, Radiation dosage, Radiation tolerance, Exposure, Radiation injuries, Industrial medicine, Industrial hygiene, Abstracts.
Identifiers: Environmental health, *Occupational safety and health, Biological effects.

The selected abstracts cover the biological effects on man and animals from exposure to microwaves. In addition to dosages and tolerances, regulations, and standards are included. (This bibliography contains 45 abstracts, 29 of which are new entries to the previous edition.)

PB-293 509/6GA PC **A02**/MF **A01**
Bureau of Radiological Health, Rockville, MD.
Bureau of Radiological Health Publications Subject Index.
Updated rept. Aug 78-Mar 79,
Mar 79, 17p* FDA/BRH-79/71, DHEW/PUB/FDA-79-8070
Supersedes rept. no. FDA/BRH-78/147, PB-286 419.

Descriptors: *Bibliographies, *Health physics, *Radiobiology, Radiology, Radiotherapy, Indexes(Documentation), Radiation effects, Medical equipment.
Identifiers: Subject indexes, Nuclear medicine.

The subject index has been prepared for the purpose of identifying Bureau of Radiological Health publications by subject area and is not intended to be a complete cross index containing name of author, date of publication, and other such biographical information. In nearly all cases the publications are numbered in the FDA publication series consisting of the FDA acronym, a 2 digit code for the fiscal year of publication, and a 4 digit code for the individual publication number. Information is not included on a publication's current availability or purchase price from the Superintendent of Documents, GPO, or the National Technical Information Service.

6S. Stress Physiology

AD-A064 882/4GA PC **A03**/MF **A01**
Virginia Polytechnic Inst. and State Univ., Blacksburg. Dept. of Engineering Science and Mechanics.
Studies of Limb-Dislodging Forces Acting on an Ejection Seat Occupant.
Final rept. 1 Mar 77-28 Feb 78,
Daniel J. Schneck. Jan 79, 41p VPI-E-78-16, AMRL-TR-78-103
Grant AFOSR-77-3296

Descriptors: *Ejection seats, *Aviation injuries, *Extremities, Displacement, Flight crews, Ejection, High velocity, Blast, Aerodynamic forces, Flight simulation, Transonic flow, Supersonic flow, Anatomical models, Blunt bodies, Flow separation, Wake, Stagnation point, Inviscid flow, Biodynamics, Pilots, Kinematics, Computerized simulation.
Identifiers: Dummies(Humans), Flail injuries.

In this report, the forces tending to dislodge the limbs of an ejection seat occupant from one another, or from a restraining surface, are calculated in the absence of flow separation. For a simulated ejection taking place at an altitude of 10,000 feet, the results show that, based on published data for a pilot's average grip retention capability, the probability of his letting go is 100% if the ejection occurs at Mach numbers exceeding 0.72. Moreover, the probability of major flail injury is around 100% if the ejection Mach number exceeds around 1.25. One major factor which contributes to these large limb-dislodging forces is the generation of stagnation points in the flow. In order to examine further the role played by flow separation around the blunt body segments, a complex velocity potential is developed to describe a stationary vortex pair located in the wake region of the flow. It remains to super-impose this vortex pair on the unseparated cross flow in order to ascertain the drag forces which contribute to limb-dislodgement. (Author)

AD-A064 892/3GA PC **A02**/MF **A01**
Walter Reed Army Inst. of Research, Washington, DC.
Endorphins May Function in Heat Adaptation,
John W. Holaday, Eddie Wei, Horace H. Loh, and Choh Hao Li. 6 Mar 78, 7p
Availability: Pub. in Medical Sciences, v75 n6 p2923-2927 Jun 78.

Descriptors: *Heat tolerance, *Exposure(Physiology), Rats, Physiological effects, Body weight, Body temperature, Reprints.
Identifiers: *Endorphins, Naloxone, *Stress(Physiology), Experimental data, Laboratory animals.

No abstract available.

AD-A065 234/7GA PC **A25**/MF **A01**
Advisory Group for Aerospace Research and Development, Neuilly-sur-Seine (France).
Operational Helicopter Aviation Medicine.
Conference proceedings,
S. C. Knapp. Dec 78, 600p Rept no. AGARD-CP-255
Presented at the Aerospace Medical Panel's Specialists' Meeting, 1-5 May 78, Fort Rucker, AL.

Descriptors: *Aviation medicine, *Helicopters, Symposia, NATO, Search and rescue, Flight crews, Fatigue, Human factors engineering, Safety.
Identifiers: *Meetings.

Helicopters have become increasingly complex. Their operational missions can be extremely demanding for aircrews and significantly differ from those of fixed wing aircraft. Rotary wing operations are compounded by specific stresses and environments, special safety and workload aspects, unique performances and goals. Combat flexibility and air mobility in land and sea warfare, medical evacuation, search and rescue, fatigue related accidents, human factors of helicopter design, visual and acoustic aspects of helicopter operations, and crashworthiness of fuel systems and aircraft, are some of the elements of the scenarios staged by the authors. The papers presented in the 6 sessions of the Specialists' Meeting, held by the Aerospace Medical Panel at Fort Rucker, USA, 1-5 May 1978, highlight the medical problems of operational helicopter flying in an exhaustive review.

AD-A065 238/8GA PC **A02**/MF **A01**
Army Research Inst. of Environmental Medicine, Natick, MA.
Induced Hyperthermia in Sedated Humans and the Concept of Critical Thermal Maximum,
Gaither D. Bynum, Kent B. Pandolf, William H. Schuette, Ralph F. Goldman, and David E. Lees. 6 Jan 78, 13p Rept no. USARIEM-M-8/78
Supersedes Rept. no. USARIEM-M-8/78 dated Dec 77, AD-A061 003.
Availability: Pub. in the American Jnl. of Physiology: Regulatory, Integrative and Comparative Physiology, v4 n3 pR228-R236 1978.

Descriptors: *Hyperthermia, Physiological effects, Sedation, Humans, Time, Interactions, Reprints.

No abstract available.

AD-A065 331/1GA PC **A03**/MF **A01**
Army Research Inst. of Environmental Medicine, Natick, MA.
Energy Expenditure While Standing or Walking Slowly Uphill or Downhill with Loads,
Nancy A. Pimental, and Kent B. Pandolf. 12 Sep 78, 29p Rept no. USARIEM-M-41/78

Descriptors: *Walking, *Stress(Physiology), *Energy consumption, Motion, Performance(Human), Tolerances(Physiology).
Identifiers: Males, Experimental data.

Eight fit male subjects (24 yr, 176 cm, 79 kg) stood, or walked at speeds of 0.5 or 0.9 m s to the -1 power for 20-min periods on grades of -10 to +25% with loads of 20 or 40 kg. Energy expenditure (watt) was not significantly different in any of the standing conditions; grade and load increased energy expenditure while standing but not significantly. Although all the standing energy expenditure means were relatively low, high perceived exertion ratings suggest limits to tolerance time in some of these conditions. All the standing means were significantly lower than the walking means. Walking 0.9 m s to the -1 power on a -10% grade was significantly lower than walking on 0.5 m s to the -1 power on a +10% grade, which was significantly lower than walking 0.9 m s to the -1 power on a +10% grade.

AD-A065 333/7GA PC **A03**/MF **A01**
Army Research Inst. of Environmental Medicine, Natick, MA.
Evidence for Increased Intrathoracic Fluid Volume in Man at High Altitude,
James J. Jaeger, J. T. Sylvester, A. Cymerman, J. T. Mansell, and J. J. Berberich. 13 Sep 78, 27p Rept no. USARIEM-M-72/78

Descriptors: *Pulmonary edema, *High altitude, Performance(Human), Medical examination, Exposure(Physiology), Lung function tests.
Identifiers: Males, Military personnel.

To determine if subclinical pulmonary edema occurs commonly at high altitude, 25 young male soldiers participated in a strenuous, 72 h field exercise at low altitude (200 to 875 m) and in a similar exercise one week later at high altitude (3000 to 4300 m). At 0, 36, and 72 h of each phase the subjects were given a physical examination, a chest radiograph was taken, and the following measurements were made: total lung capacity, forced vital capacity, residual volume, closing capacity, slope of phase III of the nitrogen washout curve, transthoracic electrical impedance, and the quasi-static relationship between transpulmonary pressure and lung volume (PV curve).

NTIS/PS-79/0427/9GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Altitude Hypoxia. Volume 1. 1964-1977 (A Bibliography with Abstracts).
Rept. for 1964-77,
Elizabeth A. Harrison. May 79, 251p*

Descriptors: *Bibliographies, *Hypoxia, *High altitude, Stress(Physiology), Narcosis, Acceleration tolerance, Adaption, Physiological psychology, Respiration, Metabolism, Cardiovascular system, Abstracts.

The selected abstracts of research reports cover stress physiology, narcosis, acceleration tolerance, adaptation (Physiology), psychophysiology, respiration, metabolism, and cardiovascular system as applied to altitude hypoxia. (This updated bibliography contains 244 abstracts, none of which are new entries to the previous edition.)

NTIS/PS-79/0428/7GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Altitude Hypoxia. Volume 2. 1976-May 79 (A Bibliography with Abstracts).
Rept. for 1976-May 79,
Elizabeth A. Harrison. May 79, 23p*
Supersedes NTIS/PS-78/0443, NTIS/PS-77/0446, NTIS/PS-76/0378, and NTIS/PS-75/237.

Descriptors: *Bibliographies, *Hypoxia, *High altitude, Stress(Physiology), Narcosis, Acceleration tolerance, Adaptation, Physiological psychology, Respiration, Metabolism, Cardiovascular system, Abstracts.

The selected abstracts of research reports cover stress physiology, narcosis, acceleration tolerance, adaptation (Physiology), psychophysiology, respiration, metabolism and cardiovascular system as applied to altitude hypoxia. (This updated bibliography contains 17 abstracts, 14 of which are new entries to the previous edition.)

6T. Toxicology

AD-A064 948/3GA PC **A04**/MF **A01**
Litton Bionetics, Inc., Kensington, MD.
Mutagen and Oncogen Study on JP-8.
Final rept.,
David Brusick, and Dale W. Matheson. Sep 78, 59p AMRL-TR-78-20
Contract F33615-77-C-0518

Descriptors: *Toxic hazards, *Deoxyribonucleic acids, *Jet engine fuels, *Mutagens, *Carcinogenesis, Toxicity, Carcinogens, Microsomes, Activation, Mice, Rats, Cultures(Biology), Cells(Biology), Lymphomas, Microbiological tests, Salmonella typhimurium, Genetics.
Identifiers: JP-8 Tanic F-3, Oncogen, In vitro analysis, Cell cultures, In vivo analysis.

The material evaluated in this study was subjected to a matrix of in vitro assays employing microbial cells, mammalian cells in culture and in vivo tests measuring potential germ cell effects in mice and rats. The test compound, JP-8 Tanic F-3, produced a moderate increase in unscheduled DNA synthesis in WI-38 cells. These data suggest that the material could interact with DNA producting nonspecific lesions. No evidence for mutagenicity was evident in the test battery and the indications for mutagenic and carcinogenic potential for this compound are minimal at best. There is no suggestion of significant genetic risk associated with this material. (Author)

AD-A064 949/1GA PC **A04**/MF **A01**
Litton Bionetics, Inc., Kensington, MD.
Mutagen and Oncogen Study on Nitroguanidine.
Final rept.,
David Brusick, and Dale W. Matheson. Sep 78, 59p AMRL-TR-78-21
Contract F33615-77-C-0518

Descriptors: *Toxic hazards, *Deoxyribonucleic acids, *Nitroguanidine, *Mutagens, *Carcinogenesis, Toxicity, Microsomes, Activation, Mice, Rats, Cells(Biology), Genetics, Lymphomas, Microbiological tests, Salmonella typhimurium.
Identifiers: Oncogen, *Toxicology, Bioassay.

The material evaluated in this study was subjected to a matrix of in vitro assays employing microbial cells, mammalian cells in culture and in vivo tests measuring potential germ cell effects in mice and rats. Nitroguanidine produced no evidence of genetic activity in any of the studies comprising this investigation. No evidence for genetic potential or risk was obtained under the conditions of this evaluation. (Author) n No evidence for genetic potential or risk was obtained under the conditions of this evaluation. (Author)

AD-A064 950/9GA PC **A04**/MF **A01**
Litton Bionetics, Inc., Kensington, MD.
Mutagen and Oncogen Study on Triaminoguanidine Nitrate.
Final rept.,
David Brusick, and Dale W. Matheson. Sep 78, 59p AMRL-TR-78-22
Contract F33615-77-C-0518

Descriptors: *Toxic hazards, *Amines, *Guanidine nitrates, *Mutagens, *Carcinogenesis, *Deoxyribonucleic acids, Toxicity, Microsomes, Activation, Mice, Rats, Cells(Biology), Lymphomas, Microbiological tests, Cultures(Biology), Salmonella typhimurium, Genetics.
Identifiers: Oncogen, *Toxicology, Bioassay, Cell cultures.

The material evaluated in this study was subjected to a matrix of in vitro assays employing microbial cells, mammalian cells in culture and in vivo tests measuring potential germ cell effects in mice and rats. Triaminoguanidine nitrate (TAGN) was mutagenic and produced DNA damage in the in vitro assays. The response was obtained without the presence of an in vitro activation system, indicating that the TAGN molecule has genetic activity. No significant induction of dominant lethal effects was observed in either mice or rats. TAGN should be considered a suspect compound regarding mutagenic and carcinogenic potential. The combined positive results from all in vitro assays indicate a high level of probability for carcinogenic activity. (Author)

AD-A064 951/7GA PC **A04**/MF **A01**
Litton Bionetics, Inc., Kensington, MD.
Mutagen and Oncogen Study on RJ-5.
Final rept.,
David Brusick, and Dale W. Matheson. Sep 78, 59p AMRL-TR-78-23
Contract F33615-77-C-0518

Descriptors: *Toxic hazards, *Jet engine fuels, *Deoxyribonucleic acids, *Mutagens, *Carcinogenesis, Toxicity, Carcinogens, Microsomes, Activation, Mice, Rats, Cells(Biology), Lymphomas, Microbiological tests, Salmonella typhimurium, Saccharomycetes, Genetics.
Identifiers: Oncogen, RJ-5 Fuels, Bioassay, In vitro analysis.

The material evaluated in this study was subjected to a matrix of in vitro assays employing microbial cells, mammalian cells in culture and in vivo tests measuring potential germ cell effects in mice and rats. The test material did not exhibit mutagenic activity in microbial, cell culture or in vivo assays. Evidence for repairable nonspecific DNA damage was obtained. This observation, while indicating the potential of RJ-5 to interact with mammalian DNA, does not constitute evidence for significant risk associated with exposure to the material. Without concommitant demonstration of mutagenicity, the significance of the unscheduled DNA synthesis data is clearly reduced. (Author)

AD-A064 952/5GA PC **A04**/MF **A01**
Litton Bionetics, Inc., Kensington, MD.
Mutagen and Oncogen Study on JP-4.
Final rept.,
David Brusick, and Dale W. Matheson. Sep 78, 59p AMRL-TR-78-24
Contract F33615-77-C-0518

Descriptors: *Toxic hazards, *Deoxyribonucleic acids, *Jet engine fuels, *Carcinogenesis, *Mutagens, Toxicity, Microsomes, Activation, Carcinogens, Mice, Rats, Cells(Biology), Lymphomas, Salmonella typhimurium, Saccharomycetes, Microbiological tests, Genetics, Cultures(Biology).
Identifiers: Oncogen, JP-4 Fuels, *Toxicology, In vitro analysis.

The material evaluated in this study was subjected to a matrix of in vitro assays employing microbial cells, mammalian cells in culture and in vivo tests measuring potential germ cell effects in mice and rats. JP-4 was shown to induce nonspecific DNA damage in WI-38 cells and possibly preimplantation loss in rats. All other data from the test battery were negative. These results are not strong indications of human risk and could be considered as representing minimal genetic toxicity. Neither the unscheduled DNA synthesis or preimplantation loss are conclusive indicators of mutation. Their implications for potential carcinogenesis must also be considered weak in light of the majority of negative test data. (Author)

AD-A064 953/3GA PC **A04**/MF **A01**
Litton Bionetics, Inc., Kensington, MD.
Mutagen and Oncogen Study on 1-Methylaminoanthraquinone.
Final rept.,
David Brusick, and Dale W. Matheson. Sep 78, 61p AMRL-TR-78-40
Contract F33615-77-C-0518

Descriptors: *Toxic hazards, *Deoxyribonucleic acids, *Anthraquinones, *Mutagens, *Carcinogenesis, Amines, Methyl radicals, Toxicity, Carcinogens, Microsomes, Activation, Mice, Rats, Cells(Biology), Lymphomas, Microbiological tests, Genetics, Salmonella typhimurium, Saccharomycetes.
Identifiers: Oncogen, In vitro analysis, Culture cells, In vivo analysis, *Anthraquinone/aminomethyl.

The material evaluated in this study was subjected to a matrix of in vitro assays employing microbial cells, mammalian cells in culture and in vivo tests measuring potential germ cell effects in mice and rats. 1-Methylaminoanthraquinone demonstrated significant genetic activity in two cell culture assays that measure gene mutation and DNA repair. Both assays responded to the chemical under activation test conditions and in one it produced activity without activation. No significant in vivo responses were obtained. If the test compound produces only gene mutation and primary DNA damage in mammalian cells it might be expected to be negative in the dominant lethal studies. (Author)

AD-A064 954/1GA PC **A04**/MF **A01**
Litton Bionetics, Inc., Kensington, MD.
Mutagen and Oncogen Study on Octylphenyl-alpha-Naphthylamine.
Final rept.,
David Brusick, and Dale W. Matheson. Sep 78, 60p AMRL-TR-78-41
Contract F33615-77-C-0518

Descriptors: *Toxic hazards, *Deoxyribonucleic acids, *Mutagens, *Amines, *Carcinogenesis, Toxicity, Carcinogens, Microsomes, Activation, Mice, Rats, Cells(Biology), Lymphomas, Microbiological tests, Salmonella typhimurium, Saccharomycetes, Genetics.
Identifiers: Oncogen, In vitro analysis, *Toxicology, In vivo analysis, Cell cultures, Naphthylamine/octylphenyl.

The material evaluated in this study was subjected to a matrix of in vitro assays employing microbial cells, mammalian cells in culture and in vivo tests measuring potential germ cell effects in mice and rats. Octylphenyl-alpha-Naphthylamine appeared to have little or no genotoxic properties. The only evidence for possible DNA interaction was obtained in tests for UDS in WI-38 cells. Microbial and mouse cell culture tests for gene mutation were negative as were dominant lethal assays in both mice and rats. The potential for carcinogenic activity by the test compound was considered negative as a result of this battery of tests. (Author)

AD-A064 955/8GA PC **A04**/MF **A01**
Litton Bionetics, Inc., Kensington, MD.
Mutagen and Oncogen Study on RJ-4.
Final rept.,
David Brusick, and Dale W. Matheson. Sep 78, 59p AMRL-TR-78-45

Contract F33615-77-C-0518

Descriptors: *Toxic hazards, *Jet engine fuels, *Deoxyribonucleic acids, *Mutagens, *Carcinogenesis, Toxicity, Carcinogens, Microsomes, Activation, Cultures(Biology), Cells(Biology), Rats, Mice, Microbiological tests, Saccharomycetes, Salmonella typhimurium, Genetics, Lymphomas.
Identifiers: Oncogen, RJ-4 Fuels, *Toxicology, In vitro analysis, In vivo analysis.

The Material evaluated in this study was subjected to a matrix of in vitro assays employing microbial cells, mammalian cells in culture and in vivo tests measuring potential germ cell effects in mice and rats. RJ-4 did not produce results from the tests conducted which indicated that it has mutagenic properties. Results from a test for unscheduled DNA synthesis (UDS) in WI-38 cells, however, did indicate that RJ-4 was capable of interacting with DNA and could induce repairable DNA lesions. The fact that no mutagenic activity was detected in vitro or in vivo reduces the significance of the UDS results as an indication of potential risk. UDS activity alone is not sufficient to categorize RJ-4 as a mutagen but the results can be interpreted as indicating a nonspecific chemical/DNA interaction. (Author)

AD-A064 956/6GA PC **A04**/MF **A01**
Litton Bionetics, Inc., Kensington, MD.
Mutagen and Oncogen Study on 4,4-Dioctyldiphenylamine.
Final rept.,
David Brusick, and Dale W. Matheson. Sep 78, 60p AMRL-TR-78-46
Contract F33615-77-C-0518

Descriptors: *Phenylamines, *Deoxyribonucleic acids, *Mutagens, *Carcinogenesis, *Toxicity, Carcinogens, Microsomes, Activation, Mice, Rats, Cells(Biology), Microbiological tests, Salmonella typhimurium, Saccharomycetes, Genetics, Cultures(Biology), Lymphomas.
Identifiers: Oncogen, Dioctyldiphenylamine, In vitro analysis, In vivo analysis, *Diphenylamine/dioctyl.

The material evaluated in this study was subjected to a matrix of in vitro assays employing microbial cells, mammalian cells in culture and in vivo tests measuring potential germ cell effects in mice and rats. 4,4-Dioctyldiphenylamine was not active in most of the assays conducted in this evaluation and the evidence for its activity in the unscheduled DNA synthesis and rat dominant lethal assays was limited to marginal effects. No clear trends showing significant genetic potential were obtained from this evaluation. While the compound cannot be classified as without genetic activity, the type of positive data obtained does not warrant a conclusion that the test compound represents a serious genetic or carcinogenic risk to mammals. (Author)

AD-A065 345/1GA PC **A02**/MF **A01**
Naval Medical Research Inst., Bethesda, MD.
The Acute Toxicity of Single, Oral Doses of 1,1-Dichloroethylene in the Fasted, Male Rat: Effect of Induction and Inhibition of Microsomal Enzyme Activities on Mortality.
Medical research progress rept.,
Melvin E. Andersen, Robert A. Jones, and Lawrence J. Jenkins, Jr. 4 Jan 78, 11p Rept no. NMRI-78-81
Availability: Pub. in Toxicology and Applied Pharmacology, v46 p227-234 1978.

Descriptors: Toxicity, *Mortality rates, Enzymes, Metabolism, Oral dosage, Rats, Reprints.
Identifiers: Ingestion(Biology), Enzyme inhibitors, *Toxicology, *Toxic substances, Lethal dosage, Bioassay.

No abstract available.

AD-A065 346/9GA PC **A02**/MF **A01**
Naval Medical Research Inst., Bethesda, MD.
1,1-Dichloroethylene Nephrotoxicity in the Rat.
Medical research progress rept.,
L. J. Jenkins, Jr., and M. E. Andersen. 9 Nov 77, 14p Rept no. NMRI-78-82
Availability: Pub. in Toxicology and Applied Pharmacology, v46 p131-141 1978.

Descriptors: *Kidney function tests, *Toxicity, Oral intake, Rats, Reprints.
Identifiers: +Nephrotoxicity, Laboratory animals, Experimental data.

No abstract available.

AD-A065 384/0GA PC **A02**/MF **A01**
Naval Medical Research Inst., Bethesda, MD.
The Distribution and Metabolism of Cyclotrimethylenetrinitramine (RDX) in the Rat after Subchronic Administration.
Medical research progress rept.,
Norman R. Schneider, Sharon L. Bradley, and Melvin E. Andersen. 17 Nov 77, 12p Rept no. NMRI-78-88
Availability: Pub. in Toxicology and Applied Pharmacology, v46 p163-171 1978.

Descriptors: *RDX, Toxicity, Metabolism, Distribution, Biological absorption, Rats, Tissues(Biology), Reprints.
Identifiers: *Toxicology, *Toxic substances, Experimental data, Laboratory animals.

No abstract available.

NTIS/PS-79/0419/6GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Toxicity of Vinyl Chloride (A Bibliography with Abstracts).
Rept. for 1969-May 79,
Elizabeth A. Harrison. May 79, 91p*
Supersedes NTIS/PS-78/0442, NTIS/PS-77/0365, and NTIS/PS-76/0197.

Descriptors: *Bibliographies, *Vinyl chloride, *Polyvinyl chloride, *Toxicology, *Industrial medicine, Public health, Epidemiology, Exposure, Polyvinyl chloride resins, Combustion products, Sources, Toxicity, Abstracts.

Research is cited on the health hazards from exposure to vinyl chloride and vinyl chloride resins. Studies are included on the epidemiology of industrial and public exposures to the compound and its degradation and combustion products. (This updated bibliography contains 82 abstracts, 3 of which are new entries to the previous edition.)

PB-293 169/9GA PC **A12**/MF **A01**
Bureau of Alcohol, Tobacco and Firearms, Washington, DC.
The Fetal Alcohol Syndrome Public Awareness Campaign: Progress Report Concerning the Advance Notice of Proposed Rulemaking on Warning Labels on Containers of Alcoholic Beverages, and Addendum.
Progress rept.
Feb 79, 256p NIAAA/NCALI-79/02

Descriptors: *Alcohols, *Toxicology, Pregnancy, Females, Toxicity, Ethanols, Marking, Abnormalities, Embryos, Physiological effects.
Identifiers: *Warning labels, *Fetal alcohol syndrome, Women, *Toxic substances, Teratogenesis, Fetus, *Health risks.

The Bureau of Alcohol, Tobacco and Firearms (ATF) published an 'Advance Notice of Proposed Rulemaking' concerning the attachment of warning labels on containers of alcoholic beverages (Federal Register, 16 Jan 1978), and has concluded that the public should be informed about the possible dangers consumption of alcoholic beverages by a pregnant woman can present to her unborn child. After reviewing evidence relating to the Fetal Alcohol Syndrome (FAS), the Treasury Department feels that it is not yet clear that such warning labels would be the best way to educate the public. It is however, encouraging the alcoholic beverage industry to work with the Government and with private interest groups to educate the public about possible teratogenic effects of alcohol. If it becomes apparent that efforts to inform the public have been unsuccessful, or if more precise medical evidence becomes available, the warning label proposal will be reconsidered. Expert opinions on medical and sociological aspects of the Fetal Alcohol Syndrome are appended.

PB-293 327/3GA PC **A06**/MF **A01**
Occupational Safety and Health Administration, Washington, DC.
Regulatory Analysis of a Proposed Policy for the Identification, Classification and Regulation of Toxic Substances Posing a Potential Occupational Carcinogenic Risk.
17 Oct 78, 116p OSHA/RV-79/001

Descriptors: *Regulations, *Toxicology, *Carcinogens, *Industrial medicine, Identifying, Classifications, Malignant neoplasms, Policies, Exposure, Economic analysis, Benefit cost analysis, Objectives.
Identifiers: Carcinogenesis, *Toxic substances, Cancer, *Occupational safety and health, Environmental health, Occupational Safety and Health Administration, Health risks.

The regulatory analysis covers several major issues raised by OSHA's proposal, discusses the need for regulations of cancer-causing substances, and examines the costs and benefits of this approach. It also presents alternatives for achieving the objectives of OSHA's proposals. These objectives are: (1) efficient reduction of occuationally related cancer; (2) increase of efficiency and consistency of OSHA's rulemaking proceedings on carcinogens; (3) how a uniform and relatively predictable approach to regulating carcinogens would permit industry to anticipate governmental response to test data on chemical carcinogenicity. This analysis also gives a description of the proposed cancer policy, discusses alternative approaches, major issues, and the economic consequences of the policy.

PB-293 378/6GA PC **A11**/MF **A01**
TSCA Interagency Testing Committee, Washington, DC.
Third Report of the TSCA Interagency Testing Committee to the Administrator, Environmental Protection Agency.
Jan 79, 244p
See also report dated Apr 78, PB-285 439.

Descriptors: *Hazardous materials, *Toxicology, *Chlorobenzenes, Physical properties, Chemical properties, Exposure, Physiological effects, Toxicity, Committees, Law(Jurisprudence), Legislation, Recommendations, Tests, Chlorine organic compounds.
Identifiers: Biological effects, Environmental effects, *Toxic substances, Bioaccumulation, *Propanol/epoxy-1, Toxic Substances Control Act, Public Law 94-469, *Propane/dichloro.

The document has been prepared for the Toxic Substances Control Act (TSCA) Interagency Testing Committee (ITC) by its technical contractor, Clement Associates, Inc. The Committee is charged with making recommendations to the Administrator of the Environmental Protection Agency (EPA) with respect to which chemicals should be tested to determine their hazards to human health or the environment. The dossiers were designed to provide the Committee with sufficient information on the chemicals' physical and chemical properties, exposure characteristics, and biological and environmental effects to support an informed judgment on whether they should be given priority for testing. The substances covered are chlorobenzenes, 1,2-Dichloropropane, glycidol and its derivatives.

PB-293 469/3GA PC **A10**/MF **A01**
Tennessee Univ., Knoxville. Water Resources Research Center.
Development of a Rapid Tissue Bioassay Technique for Screening Pollutant Effects on Fish.
Research rept.,
A. A. Friedman, and C. B. Coburn. Mar 79, 212p
71, W79-05229, OWRT-A-034-TENN(3)
Contract DI-14-34-0001-7090
Prepared in cooperation with Tennessee Technological Univ., Cookeville.

Descriptors: *Bioassay, *Toxicology, *Fishes, Assessments, Tissues(Biology), Water pollution, Liver, Development, Methodology, Experimental data, Pesticides, Hazardous materials, Concentration(Composition), Zinc sulfates, Copper sulfates, Arsenic, Sodium cyanide, Phenol, Malathion.

Identifiers: *Water pollution effects(Animals), *Toxic substances, Respirometers, Mercury/chloro, Isopropyl alcohols, PA-14 surfactant, Tergitol.

A rapid and relatively inexpensive tissue respirometric method for assessing the toxic effect of some classes of pollutants on fish has been developed and tested. It appears that fish liver homogenate respirometry is comparable with conventional fish bioassay with systemic toxicants other than those which primarily interfer with gas transfer mechanisms in the gill or are neurotoxicants. The response patterns of liver respirometry were similar in different species of fish and at different temperatures. Liver homogenates frozen in Krebs-Ringer's phosphate had a viability over six months when stored at -20C.

PB-293 503/9GA PC **A05**/MF **A01**
CALCULON Corp., Philadelphia, PA.
Camphor and Camphor Containing Products.
Final rept.,
Angela Mazella, Wendy Byer, Roger L. Malseed, John Keresztesy, and Martha Cornog. 9 Mar 79, 79p CALC-2434-500-TR-2
Contract CPSC-C-77-0088

Descriptors: *Toxicology, *Camphor, Packaging, Safety, Bornanes, Cycloaliphatic ketones, Terpene compounds, Poisons, Production, Trends, Physiological effects, Consumption, Regulations, National government, Biochemistry, Animals, Humans, Adults, Childrens, Infants, Epidemiology, Product safety, Fetus.
Identifiers: Federal Trade Commission, *Toxic substances, *Nonprescription drugs, Food and Drug Administration, Occupational Safety and Health Administration, Department of Transportation, Environmental Protection Agency.

The report reviews the acute toxicity of camphor and camphor-containing products to determine whether there are sufficient data to warrant packaging in safety closure containers under the Poison Prevention Packaging Act of 1970. Reports that camphor is classified as very toxic, with poisonings occurring among both children and adults and with camphor intoxication occurring during pregnancy. Exceptionally high toxicity has been seen in fetuses and neonates and has been attributed to the fact that neither has developed the glucuronidation process which would enable them to detoxify camphor. The American Academy of Pediatrics and the American Pharmaceutical Association have concluded that the hazards associated with camphor outweigh its questional therapeutic value. It is concluded in the monograph that given the evidence for camphor toxicity (especially in children), it is most likely desirable to require poison prevention packaging for camphor-containing products, especially those products containing camphorated oil. Chemical information, product use, economic factors, and pertinent regulations are also discussed.

PB-293 627/6GA PC **A06**/MF **A01**
National Cancer Inst., Bethesda, MD. Carcinogenesis Testing Program.
Bioassay of (2-Chloroethyl) Trimethylammonium Chloride (CCC) for Possible Carcinogenicity.
Technical rept.
1979, 103p* NCI-CG-TR-158, DHEW/PUB/NIH-79-1714

Descriptors: *Toxicology, Bioassay, Rats, Mice, Diets, Ingestion(Biology), Dose rate, Lethal dosage, Males, Females, Pathology, Histology, Signs and symptoms, Chlorine organic compounds.
Identifiers: *Ammonium chloride/(chloroethyl)-trimethyl, *Carcinogenesis, CAS 999-81-5.

A bioassay of (2-chloroethyl)trimethylammonium chloride for possible carcinogenicity was conducted by administering the test chemical in feed to F344 rats and B6C3F1 mice. Groups of 50 rats of each sex were administered either 1,500 or 3,000 ppm of the compound for 108 weeks, and 50 mice of each sex were administered 500 or 2,000 ppm for 102 weeks. Matched controls consisted of 20 untreated rats and 20 untreated mice of each sex. No tumors occurred in the rats or mice of either sex at incidences that could be associated with administration of the test chemical. It is concluded that under the conditions of this bioassay, (2-chloroethyl)trimethylammonium chloride was not carcinogenic for F344 rats or B6C3F1 mice of either sex.

7. CHEMISTRY

7A. Chemical Engineering

AD-A065 046/5GA PC **A11**/MF **A01**
IIT Research Inst., Chicago, IL.
Amine Fuels via the Urea Process.
Technical rept. 19 Apr 76-19 Sep 77,
Allan Gray, and Edward Fochtman. May 78, 235p AFRPL-TR-78-38
Contract F04611-76-C-0043

Descriptors: *Fuels, Hydrazine, Amines, Urea, Synthesis(Chemistry), Pilot plants, Chemical engineering, Yield, Laboratory tests, Sodium chloride, Sodium carbonates, Industrial production.
Identifiers: *Hydrazine/methyl, *Hydrazine/dimethyl, Synthetic fuels, Environmental impacts, Design criteria.

The distinct possibility that hydrazine fuels would not be available in the quantities required by Air Force and NASA during the late 1970's and early 1980's motivated the Air Force to support research on alternative processes which would have the potential of minimum environmental impact. This is a report of the study of the production of MMH (monomethyl hydrazine) and UDMH (unsymmetrical dimethyl hydrazine) via the urea process. Primary effort of the program was devoted to the study of the chemistry of the reactions. Engineering design data were developed for several of the unit processes and have permitted a preliminary process design and economic evaluation. Additional engineering data will be required to design a pilot plant.

NTIS/PS-79/0378/GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Pollution and Environmental Aspects of Fuel Conversion (A Bibliography with Abstracts).
Rept. for 1964-Mar 79,
Audrey S. Hundemann. May 79, 278p*
Supersedes NTIS/PS-78/0314, NTIS/PS-77/0212, NTIS/PS-76/0222, and NTIS/PS-75/371.

Descriptors: *Bibliographies, *Coal gasification, *Environmental impacts, Air pollution, Water pollution, Flue gases, Fluidized bed processing, Noise pollution, Coal liquefaction, Abstracts.

Abstracts dealing with environmental impacts related to fossil fuel conversion processes (primarily coal gasification) are presented. A few citations concerning environmental considerations pertaining to future energy growth are included. (This updated bibliography contains 271 abstracts, 58 of which are new entries to the previous edition.)

PATENT-4 072 501
Not available NTIS
Department of Energy, Washington, DC.
Method of Producing Homogeneous Mixed Metal Oxides and Metal--Metal Oxide Mixtures.
Patent,
T. C. Quinby. Filed 13 Apr 77, patented 7 Feb 78, 6p PAT-APPL-787 128
Supersedes PAT-APPL-787 128-77.
This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC. 20231 $0.50.

Descriptors: *Powders, Aqueous solutions, Ceramics, Metals, Mixtures, Oxides, Particle size, Production, Urea.
Identifiers: ERDA/360201, ERDA/360101, *Patents.

For abstract, see ERA citation 04:023981.

PB-293 158/2GA PC **A06**/MF **A01**
Dow Chemical Co., Freeport, TX.
Total Recycle Systems for Petrochemical Waste Brines Containing Refractory Contaminants.
Final rept.,
M. A. Zeitoun, C. A. Roorda, and G. R. Powers. Jan 79, 110p EPA/600/2-79-021
Grant EPA-S-803085-01-0

Descriptors: *Brines, *Reverse osmosis, *Electrodialysis, *Water pollution control, *Petrochemical industry, *Industrial waste treatment, Feasibility, Organic compounds, Cost analysis, Potable water, Process charting, Design criteria, Performance evaluation.
Identifiers: *Waste water reuse.

Petrochemical wastewaters containing relatively high concentrations of salt and refractory organics were selected to study their feasibility for total recycle. A combination of reverse osmosis and electrodialysis was operated as a hybrid system using the pretreated wastes to produce reusable water and a concentrated brine. The combined electrodialysis-reverse osmosis system is not considered economically feasible when applied to industrial wastewaters containing relatively high concentrations of salt.

PB-293 281/2GA PC **A03**/MF **A01**
Bureau of Mines, Albany, OR. Albany Metallurgy Research Center.
Continuous-Circuit Preparation of Phosphoric Acid from Florida Phosphate Matrix.
Rept. of investigations 1978,
J. C. White, T. N. Goff, and P. C. Good. 1978, 28p BUMINES-RI-8326

Descriptors: *Phosphoric acid, *Acidification, Phosphate deposits, Florida, Sampling, Filtration, Extraction, Sulfuric acid, Nonmetalliferous minerals, Chemical compounds, Manufacturing.
Identifiers: *Phosphate rock slime, Procedures.

A research study was conducted to devise a method for producing phosphoric acid directly from unbeneficiated Florida phosphate matrix. This research was performed as part of the Bureau of Mines, U.S. Department of the Interior, goals of improving minerals and metals recovery from domestic resources and of minimizing the environmental impact associated with mineral recovery operations. This report describes research in which unbeneficiated, dry, south-central Florida phosphate matrix was digested with sulfuric acid in a continuous-circuit, five-tank reactor to yield phosphoric acid and gypsum residue. Feed capacity of the reactor was 100 pounds (45 kg) of dry matrix per 24-hour day. When digestion was carried out at 185 degrees F (85C), acid filtratation rates of up to 420 pounds of P2O5 per square foot per day were attained. Combined iron and aluminum impurities in the product filter acid were about 60 percent greater than values reported in commercially produced acid derived from concentrate. Phosphate recovery was 87 to 90 percent of the phosphate contained in the as-mined matrix.

PB-293 572/4GA PC **A03**/MF **A01**
California Univ., Berkeley. Dept. of Nuclear Engineering.
An Investigation of the Accuracy of the Merkel Equation for Evaporative Cooling Tower Calculations.
Waste heat management,
G. Yadigaroglu, and E. J. Pastor. Jan 74, 30p WHM-9, NSF/RA/N-74/427
Grant NSF-GI-34932

Descriptors: *Cooling towers, Air flow, Heat transfer, Mass transfer, Enthalpy, Mathematical models.
Identifiers: *Natural draft cooling towers, *Merkel equation, Waste heat.

The exact differential equations governing heat and mass transfer and air flow in an evaporative, natural-draft cooling tower are presented. The Merkel equation is then derived starting from this exact formulation and showing all the approximations involved. The Merkel formulation lumps the sensible and the latent heat transfer together and considers a single enthalpy-difference driving force for the total heat transfer. The effect of the approximations inherent in the Merkel equation is investigated and analyzed by a series of paramet-

ric numerical calculations of cooling tower performance under various ambient conditions and load conditions.

PB-294 080/7GA PC **E20**/MF **E07**
Burns and Roe Industrial Services Corp., Paramus, NJ.
Parametric Study on Brackish Water Membrane Desalting Plants. Volume I,
S. V. Cabibbo, D. B. Guy, A. Ko, A. Ammerlaan, and R. Singh. 15 Mar 79, 1922p W79-05501, OWRT-7544(1)
Contract DI-14-34-001-7544

Descriptors: *Membranes, *Desalting, *Electrodialysis, Design criteria, Performance evaluation, Brackish water, Cost analysis, Capitalized costs, Acidification, Operating costs.
Identifiers: Desalination plants(10 MGD), *Reverse osmosis desalination, Hollow fiber membranes, Spiral wound membranes.

A detailed engineering and economic study was undertaken on spiral wound and hollow fiber reverse osmosis module designs and a tortuous path electrodialysis stack design used in membrane desalting plants with product water capacities of 1, 5 and 10 million gallons per day. The minimum pretreatment required, based on each of the six brackish waters, was determined to achieve water recoveries of 70, 80 and 90 percent. The preferred pretreatment was acidification. Plant layout arrangements, process flow and piping and instrumentation diagrams were prepared in detail for use as a basis for preparing capital and annual cost estimates. The impact of reduced pressure operation, interest rate, electric power cost and membrane life on product water costs was determined. The cost data indicated that membranes and modules averaged 26.5% of total capital costs and 19.4% of annual costs. Operating and maintenance labor required 23.4% of annual costs while electricity and chemicals were 13.8% and 11.9% respectively. A research and development program was outlined to reduce costs and improve reliability.

PB-294 140/9GA PC **A08**/MF **A01**
Little (Arthur D.), Inc., Cambridge, MA.
Chemical Processing, An Operation Manual for Cooperative Program Use.
Jun 57, 164p
Sponsored in part by Agency for International Development, Washington, DC. Communications Resources Div.

Descriptors: *Chemical industry, *Manuals, Design criteria, Process charting, Equipment, Dyers, Evaporators, Pressure filters, Heat exchangers, Cost analysis, Rotary filters, Management planning, Performance evaluation.
Identifiers: Developing country application.

This manual describes some of the basic equipment for the establishment of chemical processing industries. Six types of equipment are described: dryers; evaporators; pressure filters; jacketed process vessels; heat exchangers; and rotary vacuum filters. The manual is designed as a guide for the operation of many of the more important chemical process systems, which are significant in a growing industrial economy. It should be of help in the planning stages of almost any process industry.

7B. Inorganic Chemistry

AD-A065 304/8GA MF **A01**
New York Academy of Sciences, NY.
Synthesis and Properties of Low-Dimensional Materials,
Joel S. Miller, and Arthur J. Epstein. 1978, 838p
Contract N00014-77-C-0374
Pub. in Annals of the New York Academy of Sciences, v313 p1-828 1978. Presented at conference held 13-16 Jun 77.
Availability: The New York Academy of Sciences, 2 East 63rd Street, New York, NY 10021. HC$80.00 .(No copies furnished by DDC).

Descriptors: *Organic compounds, *Inorganic compounds, *Synthesis(Chemistry), *Chemical properties, Anisotropy, Reports, Optical properties, Magnetic properties, Electrical properties, Mechanical properties, Molecular structure, Chemical bonds, Semiconductors, Industrial research, Military research.

Low-dimensionality is acribed to materials that exhibit large anisotropic ratios in some intensive physical properties. For example, pseudo-one-dimensional materials typically have significantly greater optical, magnetic, electrical, and/or mechanical properties in one dimension with respect to the orthogonal directions. Similarly, pseudo-two-dimensional complexes exhibit pronounced physical properties in two dimensions with respect to the remaining dimension. These enhanced properties arise from cooperative interactions manifested by linear chain (1-D) or layer (2-D) structures, which principally occur in the solid. For years, advancement in this area of science was dominated by synthetic chemistry; however, in the last decade physicists have characterized the unique properties exhibited by these materials.

7C. Organic Chemistry

AD-A065 076/2GA PC **A02**/MF **A01**
Science Applications, Inc., Sunnyvale, CA.
Some Perfluorocarbocyclic Ethers and Polyethers from Hexafluorobenzene,
Madeline S. Toy, and Roger S. Stringham. 11 Apr 77, 16p AFOSR-TR-79-0124
Contract F44620-76-C-0027
Availability: Pub. in Jnl. of Polymer Science, v16 p2781-2795 1978.

Descriptors: *Polyethers, *Cyclic compounds, Fluoropolymers, Benzene, *Synthesis(Chemistry), Reprints.
Identifiers: Benzene/hexafluoro.

No abstract available.

AD-A065 370/9GA PC **A02**/MF **A01**
Arizona Univ., Tucson. Dept. of Chemistry.
Low-Molecular-Weight Polybenzimidazoles from Aromatic Dinitriles and Aromatic Diamines,
Richard A. Brand, Maria Bruma, Raymond Kellman, and C. S. Marvel. 12 Jul 77, 11p ARO-10443.6-C
Contracts DAAG29-72-C-0024, DAHC04-72-C-0024
Availability: Pub. in Jnl. of Polymer Science: Polymer Chemistry Edition, v16 p2275-2284 1978.

Descriptors: *Polybenzimidazole, *Synthesis(Chemistry), Nitriles, Amines, Aromatic compounds, Molecular structure, Reprints.
Identifiers: Molecular weights.

No abstract available.

AD-A065 392/3GA PC **A02**/MF **A01**
Wisconsin Univ.-Madison. Dept. of Chemistry.
The Preparation of alpha, omega-Dibromopermethylpolysilanes and Characterization of these and Related Chloropermethylpolysilanes by Mass Spectrometry,
Catherine Hurt Middlecamp, Wieslaw Wojnowski, and Robert West. 16 Aug 76, 13p AFOSR-TR-79-0146
Grant AFOSR-74-2644
Availability: Pub. in Jnl. of Organometallic Chemistry, v140 p133-143 1977.

Descriptors: *Polysilanes, *Synthesis(Chemistry), Methyl radicals, Bromine compounds, Chlorine compounds, Mass spectrometry, Reprints.
Identifiers: Poly(silane/dibromo-methyl), Poly(silane/chloro-methyl).

No abstract available.

AD-A065 423/6GA PC **A02**/MF **A01**
Wisconsin Univ.-Madison. Dept. of Chemistry.
Cyclic Polysilanes XIII. Ring Closure Reactions of Alpha, Omega-Dichloropermethylpolysilanes: The Preparation of Heterocyclic Phenylphosphapermethylsilanes(PhP)m(SiMe2)n,
Richard T. Oakley, David A. Stanislawski, and Robert West. 14 Mar 78, 18p AFOSR-TR-79-0145
Grant AFOSR-74-2644
See also AD-A050 941.
Availability: Pub. in Jnl. of Organometallic Chemistry, v157 p389-404 1978.

Descriptors: *Polysilanes, *Synthesis(Chemistry), Phosphorus heterocyclic compounds, Molybdenum compounds, Metal complexes, Reprints.
Identifiers: Poly(silane/dichloro-methyl).

No abstract available.

AD-A065 496/2GA PC **A02**/MF **A01**
Massachusetts Inst. of Tech., Cambridge. Dept. of Chemistry.
Reactions of Silacyclopropanes with 1,2-Dipolar Reagents: Diazomethane and Methylenetrimethylphosphorane,
Dietmar Seyferth, Don P. Duncan, Hubert Schmidbaur, and Peter Holl. 14 Apr 78, 10p AFOSR-TR-79-0106
Grant AFOSR-76-2917
Prepared in cooperation with Technische Universitaet. Munich. Institut fuer Anorganische Chemie.
Availability: Pub. in Jnl. of Organometallic Chemistry, v159 p137-145 1978.

Descriptors: Silicon compounds, Cyclopropanes, *Synthesis(Chemistry), Organic phosphorus compounds, Diazo compounds, Reprints.
Identifiers: *Methane/diazo, *Phosphorane/methylene-trimethy, *Silacyclopropanes.

No abstract available.

7D. Physical Chemistry

AD-A064 917/8GA PC **A02**/MF **A01**
California Univ., Santa Barbara. Dept. of Chemistry.
Extrinsic Field Effect and Absolute Para-Hydrogen Conversion Rate on Lutetia,
C. P. Madhusudhan, and P. W. Selwood. 3 May 76, 5p ARO-6799.21-C
Grant DAHC04-74-G-0231
Availability: Pub. in Jnl. of Catalysis, v45 p106-109 1976.

Descriptors: *Lutetium compounds, *Catalysis, Reaction kinetics, Hydrogen, Molecular vibration, Oxides, Reprints.
Identifiers: *Lutetia.

No abstract available.

AD-A064 920/2GA PC **A02**/MF **A01**
Defence Research Establishment, Pacific, Victoria (British Columbia).
Improved Trace Oil Analysis Technique Using the Liquid Chromatographic Method with a UV detector.
Materials rept.,
R. B. H. Sewell, and L. K. Yee. Sep 78, 22p Rept no. DREP-78-A

Descriptors: *Breathing gases, *Oils, *Microanalysis, *Liquid chromatography, *Ultraviolet detectors, Sensitivity, Divers, Air, Water.
Identifiers: *Gas analysis, *Water analysis, Chemical analysis, Trace elements, Air pollution detection, Water pollution detection, Canada.

DREP has developed an improved method for measuring the trace amounts of oil in diver's air. The method includes the use of a Liquid Chromatograph with a variable wavelength ultra violet detector. The sample size for air can be reduced to 10 litres from 30 litres and the high degree of sensitivity of 0.2 of a microgram can be achieved. This method can also be used for the analysis of oil in water. (Author)

AD-A064 932/7GA PC **A03**/MF **A01**
University of Southern California, Los Angeles. Dept. of Chemistry.
Rate of Primary Photoproduct Formation for Aqueous Cr(en)3(3+) and Cr(nH sub 3) sub 5C1(2+).
Technical rept.,
R. Fukuda, R. T. Walters, H. Macke, and A. W. Adamson. Feb 79, 36p Rept no. TR-7
Contract N00014-76-C-0548

Descriptors: *Chromium compounds, *Photochemical reactions, High energy rate forming, Pulsed

lasers, Photolysis, Ethylenediamine, Chlorine compounds, Ammino compounds, Excitation, Emission spectra, Absorption spectra, Metal complexes, Ligands.

Chromium(III) complexes have been the subject of many detailed photochemical and photophysical studies. The work described here has been addressed primarily to the possible resolution of an important uncertainty in the excited state reaction scheme. As shown schematically in Figure 1, absorption of light in the region of the first ligand field band yields a Franck-Condon (that is, vibrationally excited) excited quartet state, Q sub FC.

AD-A064 970/7GA PC **A05**/MF **A01**
Wright State Univ., Dayton, OH. Brehm Lab.
Optical Emission from Ion-Atom and Ion Molecule Interactions.
Final rept. 1 Jul 77-30 Jun 78,
E. Grant Jones. Dec 78, 86p 3699-L2, AFAPL-TR-78-99
Contract F33615-77-C-3141

Descriptors: *Emission spectroscopy, *Charge transfer, *Reaction kinetics, Energy transfer, Rare gases, Excitation, Resonance radiation, Electronic states, Xenon, Luminescence.
Identifiers: *Ion molecule interactions, *Atom ion interactions.

Reactions of the rare gases, Rg, (Rg = Ar, Kr, Xe) with helium molecular ions, argon molecular ions and argon ions producing excitation have been investigated. All excitation is accompanied by the transfer of translational into internal energy via charge-transfer or collisional excitation reactions. Collisions of the argon atomic and molecular ions are efficient in exciting the resonant radiation in the RgI spectrum. Kinetic energy thresholds for several of these reactions are reported. The symmetric system Xe ion/Xe has been studied with respect to production of Xe ion neutral atomic resonance radiation. The effects of the electronic state of the reacting xenon ions are discussed and possible reaction mechanisms are proposed. (Author)

AD-A065 030/9GA PC **A02**/MF **A01**
Massachusetts Inst. of Tech., Lexington. Lincoln Lab.
How Many Physically Significant Solutions are There to the Self-Induced Transparency Equations.
Journal article,
Robert C. Harney. 1978, 9p MS-4452, ESD-TR-78-298
Contract F19628-78-C-0002
Availability: Pub. in Coherence and Quantum Optics IV p781-788 1978.

Descriptors: *Coherent electromagnetic radiation, Excitation, Atomic spectroscopy, Quantum statistics, Maxwells equations, Electricity, Dipoles, Reprints.

No abstract available.

AD-A065 070/5GA PC **A08**/MF **A01**
Rhode Island Univ., Kingston. Dept. of Ocean Engineering.
Characterization of Oxidation Product Films on Lead in Aqueous Media by In Situ Raman Spectroscopy.
Technical rept.,
R. Thibeau, C. Brown, and R. Heidersbach. Feb 79, 173p Rept no. TR-6
Contract N00014-76-C-0889

Descriptors: *Lead compounds, Thin films, *Oxidation reduction reactions, Corrosion, Lead oxides, *Raman spectra, Passivity, *Surface properties, Chemical composition, Exposure(General), Water soluble materials, Solutions(Mixtures), Phosphates, Carbonates, Chlorides, Theses.

Raman spectroscopy was used to determine the composition of surface films formed on lead by exposure to aqueous solutions of several different compositions. Spectra were recorded while the flat lead samples were completely immersed in solution, while the oxidative reactions were occurring, thus avoiding any changes which might be caused by removal from the aqueous environment.

AD-A065 103/4GA PC **A03**/MF **A01**
North Carolina Univ. at Chapel Hill. Dept. of Chemistry.
The Interaction of Hydrazine with Copper(II) Chloride in Acidic Solutions. The Formation, Spectral and Magnetic Properties, and Structures of Copper(II), Copper(I), and Mixed Valence Species.
Technical rept.,
David B. Brown, Jeffrey A. Donner, James W. Hall, Scott R. Wilson, and Roxy B. Wilson. 1 Feb 79, 41p Rept no. TR-6
Contract N00014-76-C-0816, Grant NSF-CHE77-09913
Prepared in cooperation with Vermont Univ., Burlington. Dept. of Chemistry, Contract N00014-75-C-0756, Rept. no. TR-14. Sponsored in part by Grant NSF-DMR76-80583.

Descriptors: Copper compounds, Chlorides, *Hydrazine, Complex compounds, Metal complexes, Valence, Magnetic properties, Crystal structure, Molecular structure, Acids, Solutions(Mixtures), Infrared spectra, X ray spectra.
Identifiers: *Copper chlorides.

The reaction of hydrazine with copper(II) chloride in acidic aqueous solution has been shown to produce at least four distinct complexes. Hydrazine behaves as a reducing agent, leading to the white, diamagnetic copper(I) complex (N2H4)CuCl and the black paramagnetic mixed-valence copper(I,I,II) complex (N2H5)2Cu2Cl6. Blue and green copper(II) complexes (N2H5)2CuCl4 2H2O and (N2H5)CuCl3 are also formed. Infrared spectra establish the presence of coordinated hydrazinium ions in the blue, green, and black compounds. Structures are proposed for all of these materials based on spectroscopic and magnetic measurements.

AD-A065 108/3GA PC **A06**/MF **A01**
Pennsylvania State Univ., University Park. Dept. of Chemistry.
Mixed-Metal Clusters.
Interim technical rept.,
Wayne L. Gladfelter, and Gregory L. Geoffroy. 5 Feb 79, 101p Rept no. TR-79-1
Contract N00014-77-C-0417
Prepared in cooperation with Minnesota Univ., Minneapolis. Dept. of Chemistry.

Descriptors: *Transition metal compounds, *Catalysis, Surface properties, Clustering, Carbonyl compounds, Bonding, Nuclear magnetic resonance, Mixtures, Silicon dioxide, Aluminum oxides, Pyrolysis, Ligands, Metal complexes.

This article is a comprehensive review of the synthesis, properties, reactivity and dynamics of mixed-metal clusters. (Author)

AD-A065 110/9GA PC **A02**/MF **A01**
Wisconsin Univ.-Milwaukee. Dept. of Chemistry.
International Summer Institute in Surface Science (3rd) (ISISS 1977).
Final rept. 1 Aug 77-30 Apr 78,
Ralf Vanselow. 20 Feb 79, 16p
Grant N0014-77-G-0058

Descriptors: *Surface chemistry, *Catalysis, *Chemisorption, Computerized simulation, Desorption, Adatoms, Metals, Organometallic compounds, Enzyme chemistry, Profiles, Auger electron spectroscopy, Abstracts, Reports.
Identifiers: Reviews.

No abstract available.

AD-A065 190/1GA PC **A03**/MF **A01**
Washington Univ., Seattle. Lab. for Chemometrics.
The Generalized Standard Addition Method.
Interim rept. no. 13, 1 Apr 78-31 Mar 79,
Bo E. H. Saxberg, and Bruce R. Kowalski. Sep 78, 41p
Contract N00014-75-C-0536

Descriptors: *Analytical chemistry, *Addition reactions, Detectors, Sampling, Interference, Quantitative analysis, Concentration(Chemistry), Polynomials, Nonlinear systems.
Identifiers: *Chemical analysis.

The normal standard addition methods assumes that, for any one analyte in a sample there is an analytical sensor which responds to that analyte and no other unknown in the sample. When the analytical sensor is not completely selective, so-called interference effects results which can be a major source of error. The generalized standard addition method provides a means of accounting for the interference effects, to actually quantify the magnitude of the interferences, and simultaneously to determine the analyte concentrations. (Author)

AD-A065 191/9GA MF **A01**
Vermont Univ., Burlington. Dept. of Chemistry.
The Effect of Intercluster Interactions on the Thermal and Magnetic Properties of (Cr3O(CH3COO)6(H2O)3)Cl·6H2O.
Technical rept.,
James T. Wrobleski, Chester T. Dziobkowski, and David B. Brown. 17 Jan 79, 15p Rept no. TR-13
Contract N00014-75-C-0756
Availability: Microfiche copies only.

Descriptors: *Chromium compounds, *Acetates, *Thermal properties, *Magnetic properties, Clustering, Molecule molecule interactions, Hamiltonian functions, Spin resonance, Ground state, Crystallography, Ion exchange.
Identifiers: Specific heat.

Inclusion in the hamiltonian of a perturbing term which describes the pairwise spin exchange between (Cr3O(CH3COO)6(H2O)3)+ equilateral triangular clusters in (Cr3O(CH3COO)6(H2O)3)Cl·6H2O splits the unperturbed ground state into two nondegenerate Kramers doublets. The effect of this splitting is to introduce a Schottky type anomaly in the theoretical heat capacity curve. Excellent agreement between experimental and theoretical heat capacities is found when two crystallographically inequivalent pairs of equilateral trimer sites with different intercluster exchange parameters are assumed. Low-temperature magnetic susceptibility data for this complex are well reproduced by using the parameters which are obtained from the heat capacity data. (Author)

AD-A065 203/2GA PC **A02**/MF **A01**
California Univ., San Diego, La Jolla. Inst. for Pure and Applied Physical Sciences.
Magnetic Properties of RExMo6Se8 Compounds between 0.7 and 295K,
D. C. Johnston, and R. N. Shelton. 9 Aug 76, 13p AFOSR-TR-77-0733
Contract F44620-72-C-0017
Availability: Pub. in Jnl. of Low Temperature Physics, v26 n3, p561-572 1977.

Descriptors: *Lanthanum compounds, *Molybdenum compounds, *Selenium compounds, *Magnetic properties, Crystallography, Magnetization, Reprints.

No abstract available.

AD-A065 208/1GA PC **A02**/MF **A01**
Cornell Univ., Ithaca, NY. Dept. of Chemistry.
Gradient Pressure Chemical Ionization.
Final rept. 1 Sep 75-30 Sep 78,
Fred W. McLafferty. 4 Jan 79, 6p ARO-13136.3-C
Grant DAAG29-76-G-0020

Descriptors: *Ionized gases, *Temperature gradients, Mass spectra, Sampling, Solvents, Cryopumping, Drops, Vaporization, Laser beams, Mixtures, Organic compounds.

Mass spectral data can be obtained directly from low volatility samples by spraying a dilute (approximately ten to the minus 4th power) solution of the sample directly into a chemical ionization source, using the solvent as the ionizing reagent gas. Substantial improvements have included prefiltering, cryogenic pumping, droplet desolvation, and orifice configuration and temperature control. A major effort has been made to add sufficient energy to the droplets that solvent vaporization takes place too fast for the solute molecules to agglomerate. Attempts to do this with a corona discharge were unsuccessful, but experiments with a focused laser beam are more promising. (Author)

AD-A065 214/9GA PC **A02**/MF **A01**
Florida Univ., Gainesville. Dept. of Chemistry.
Effect of Moisture on the Chromium (III)-Chromium (II) Electrode Reaction in Molten LiCl-KCl Eutectic,
H. A. Laitinen, Y. Yamamura, and I. Uchida. 16 Jan 78, 7p ARO-12551.3-C
Grant DAAG29-75-G-0092
Availability: Pub. in Jnl. of the Electrochemical Society, v125 n9 p1450-1454 Sep 78.

Descriptors: *Chromium compounds, *Hydrolysis, Fused salts, Lithium chloride, Potassium chloride, Eutectic composites, Reprints.
Identifiers: Electrochemistry.

No abstract available.

AD-A065 217/2GA PC **A02**/MF **A01**
Georgia Inst. of Tech., Atlanta School of Physics.
Mobilities and Interaction Potentials for Rb(+)-Ar, Rb(+)-Kr, and Rb(+)-Xe,
I. R. Gatland, D. R. Lamm, M. G. Thackston, W. M. Pope, and F. L. Eisele. 18 Aug 78, 5p ARO-14965.5-P
Grant DAAG29-77-G-0171
Availability: Pub. in Jnl. of Chemical Physics, v69 n11 p4951-4954, 1 Dec 78.

Descriptors: *Rubidium, *Ion ion interactions, Mass spectrometry, Rare gases, Argon, Krypton, Xenon, Reprints.

No abstract available.

AD-A065 223/0GA PC **A02**/MF **A01**
Stanford Univ., CA. Dept. of Chemistry.
Experimental Determination of the Singlet-Triplet Splitting in Methylene,
R. K. Lengel, and R. N. Zare. 2 Jun 78, 6p ARO-15219.1-C
Grant DAAG29-77-G-0151
Availability: Pub. in Jnl. of the American Chemical Society, v100 p7495-7499 1978.

Descriptors: *Methylenes, *Photolysis, Ketenes, Collisions, Laser induced fluorescence, Reprints.

No abstract available.

AD-A065 225/5GA PC **A02**/MF **A01**
San Diego State Univ., CA. Dept. of Chemistry.
Effect of Aryl Sustituents, Solvent, and Steric Effects on the Efficiency of Excited-State Carbonyl Production from 1,2-Dioxetanes,
William H. Richardson, James H. Burns, Mary E. Price, James H. Anderegg, and Richard Crawford. 9 Jan 78, 6p ARO-14847.1-C
Grant DAAG29-77-G-0154
Availability: Pub. in Jnl. of the American Chemical Society, v100 n24 p7596-7600, 22 Nov 78.

Descriptors: *Dioxanes, *Oxetanes, Carbonyl compounds, Aryl radicals, Solvents, Excitation, Substitution reactions, Reprints.

No abstract available.

AD-A065 237/0GA MF **A01**
Polytechnic Inst., of New York, Brooklyn.
Compounds with Defect Lattice Structures.
Final rept. 1 Mar 75-31 Dec 78,
E. Banks. Nov 78, 124p ARO-12613.1-C, ARO-15558.1-C
Grants DAAG29-75-G-0096, DAAG29-78-G-0105
Availability: Microfiche copies only.

Descriptors: *Solid state chemistry, *Solid state physics, Rare earth compounds, Defects(Materials), Crystal lattices, Magnesium compounds, Fluorides, Cadmium compounds, Solid electrolytes, Luminescence, Phthalocyanines, Metal complexes, Nuclear magnetic resonance, Mossbauer effect, Electron spin resonance.

This report is the last in a long series of reports on research in solid-state chemistry and physics, under the general title, 'Compounds with Defect Lattice Structures'. Over the years, a wide variety of investigations had been undertaken, often going beyond the literal meaning of the title, although the behavior of solids containing varying concentrations of point imperfections and their complexes has been the major theme. The overriding goal has been the search for interesting magnetic, dielectric, conductive, and luminescent behavior which may find application in solid-state electronic devices or assist in the explanation of the behavior of related materials which find application in such devices.

AD-A065 245/3GA PC **A02**/MF **A01**
California Inst. of Tech., Pasadena. Dept. of Applied Mathematics.
Rotating Spiral Wave Solutions of Reaction-Diffusion Equations,
Donald S. Cohen, John C. Neu, and Rodolfo R. Rosales. 10 Jan 78, 13p ARO-12615.10-M
Contracts DAAG29-75-C-0009, DAHC04-68-C-0006
Sponsored in part by NSF-GP-32157.
Availability: Pub. in Siam Jnl. of Applied Mathematics, v35 n3 p536-547 Nov 78.

Descriptors: *Chemical reactions, *Wave functions, Diffusion, Rotation(Chemical bonds), Reprints.

No abstract available.

AD-A065 247/9GA PC **A02**/MF **A01**
Houston Univ., TX. Dept. of Chemistry.
Electrochromism in Some Thin-Film Transition-Metal Oxides Characterized by X-Ray Electron Spectroscopy,
Richard J. Colton, Alberto M. Guzman, and J. Wayne Rabalais. 24 Mar 77, 9p ARO-14361.7-C
Grant DAAG29-77-G-0054
Prepared in cooperation with United Technologies Corp., Pittsburgh, PA. Essex Group, and Pittsburgh Univ., PA. Dept. of Chemistry.
Availability: Pub. in Jnl. of Applied Physics, v49 n1 p409-416 Jan 78.

Descriptors: *Transition metal compounds, *Electrochemistry, Thin films, Oxides, X ray spectroscopy, Electron spectroscopy, Reprints.

No abstract available.

AD-A065 248/7GA PC **A02**/MF **A01**
Houston Univ., TX. Dept. of Chemistry.
Molecular Rearrangement and Cluster Formation in the Secondary Ion Mass Spectra (SIMS) of Fluoride Salts,
J. Ashley Taylor, and J. Wayne Rabalais. 26 Oct 77, 9p ARO-14361.6-C
Grant DAAG29-77-G-0054
Availability: Pub. in Surface Science, v74 p229-236 1978.

Descriptors: *Fluorides, Ions, Mass spectra, Molecular structure, Clustering, Reprints.
Identifiers: Inorganic salts, *Secondary ion mass spectroscopy.

No abstract available.

AD-A065 280/0GA PC **A02**/MF **A01**
Illinois Univ. at Urbana-Champaign.
Far-Infrared Superradiance in Methyl Fluoride,
A. T. Rosenberger, S. J. Petuchowski, and T. A. DeTemple. 1978, 12p ARO-12728.4-P
Grant DAHC04-75-G-0099
Availability: Pub. in Coherence and Quantum Optics IV, p555-565 1978.

Descriptors: Methyl radicals, *Emission spectra, Far infrared radiation, Excitation, Steady state, Mathematical analysis, Reprints.
Identifiers: *Superradiance, Methyl/fluoride, Fluorine organic compounds.

No abstract available.

AD-A065 281/8GA PC **A02**/MF **A01**
Army Research Office, Research Triangle Park, NC.
Interactions of Ion Beams with Surfaces. Reactions of Nitrogen with Silicon and its Oxides,
J. Ashley Taylor, Gerald M. Lancaster, A. Ignatiev, and J. Wayne Rabalais. 10 May 77, 10p ARO-14361.4-C
Grant DAAG29-77-G-0054
Availability: Pub. in Jnl. of Chemistry and Physics, v68 n4 p1776-1784, 15 Feb 78.

Descriptors: *Silicon, Oxides, *Nitrogen, Ion beams, Chemical reactions, Reprints.
Identifiers: *Silicon oxides, *Ion molecule interactions, *Surfaces.

No abstract available.

AD-A065 291/7GA PC **A06**/MF **A01**
California Univ., Santa Barbara. Dept. of Chemistry.
Photoluminescence Spectroscopy with a CW Dye Laser. A Study of the Diatomic Alkaline Earth Metal Halides and Oxides.
Final rept. Jun 73-Dec 77,
D. O. Harris. 1977, 121p AFOSR-TR-79-0101
Grants AFOSR-73-2565, NSF-MPS-72-04978

Descriptors: *Alkaline earth oxides, *Alkaline earth compounds, *Halides, Chemical lasers, *Photoluminescence, Diatomic molecules, Continuous wave lasers, Dye lasers, Military applications, Excitation, Resonance radiation.
Identifiers: *Laser spectroscopy.

Increased Air Force capabilities in reconnaissance, communication and several other areas depend on the development of new laser technology. Chemical laser systems possess certain properties such as wavelength, power and efficiency, which make them highly attractive for many applications. To assure development of different and improved chemical laser systems, an understanding of the basic properties and characteristics of potentially useful molecules and reactions is critical. This research involved the study of diatomic systems in various experiments involving observation of photo- and chemiluminescence, and by reanalysis of literature spectroscopic data. Continuous wave (cw) tunable dye lasers were used to excite photoluminescence from several diatomic metal oxides and halides. Experiments included excitation, fluorescence and various forms of double resonance spectroscopy. (Author)

AD-A065 311/3GA PC **A02**/MF **A01**
Battelle Columbus Labs., OH.
Quantum Dynamics of the F(+)H2 Reaction: Resonance Models, and Energy and Flux Distributions in the Transition State,
Susan L. Latham, Joe F. McNutt, Robert E. Wyatt, and Michael J. Redmon. 30 May 78, 11p ARO-13600.1-CX
Contract DAAG29-76-C-0048
Prepared in cooperation with Texas Univ. at Austin, Dept. of Chemistry.
Availability: Pub. in Jnl. of Chemical Physics, v69 n8 p3746-3755, 15 Oct 78.

Descriptors: *Quantum chemistry, *Resonance scattering, Hydrogen, Molecular vibration, Energy transfer, Entropy, Wave functions, Reprints.
Identifiers: *Hydrogen fluoride.

No abstract available.

AD-A065 313/9GA PC **A02**/MF **A01**
Wayne State Univ., Detroit, MI. Dept. of Chemistry.
Substituent Effects on the Decomposition of 1,2-Dioxetanes,
Krzysztof A. Zaklika, Arthur L. Thayer, and A. Paul Schaap. 17 Oct 77, 5p ARO-13200.4-C
Grant DAAG-29-76-G-0013
Availability: Pub. in Jnl. of the American Chemical Society, v100 n15 p4916-4918, 19 Jul 78.

Descriptors: *Oxetanes, *Decomposition, Substitution reactions, Reaction kinetics, Activation energy, Chemiluminescence, Reprints.
Identifiers: *Dioxetanes.

No abstract available.

AD-A065 334/5GA PC **A02**/MF **A01**
Pittsburgh Univ., PA. Dept. of Physics and Astronomy.
Measurements of the O(+) + N sub 2 and O(+) + O sub 2 Reaction Rates from 300 to 900 K,
Aikwo Chen, Rainer Johnsen, and Manfred A. Biondi. 17 May 78, 5p ARO-15740.1-P
Grants DAAG29-78-G-0044, NGL-39-011-137
Availability: Pub. in Jnl. of Chemical Physics, v69 n6 p2688-2691, 15 Sep 78.

Descriptors: *Charge transfer, *Reaction kinetics, Oxygen, Nitrogen, Afterglows, Drift tube mass spectroscopy, Reprints.
Identifiers: *Ion molecule interactions.

No abstract available.

AD-A065 335/2GA PC **A02**/MF **A01**
Pennsylvania Univ., Philadelphia. Dept. of Chemistry.
Two-Photon Spectra of Gases by Three-Wave Mixing,
Robin M. Hochstrasser, G. R. Meredith, and H. P. Trommsdorff. 4 Oct 77, 7p ARO-13577.7-P
Grants DAAG29-76-G-0198, PHS-GM-12592
Availability: Pub. in Chemical Physics Letters, v53 n3 p423-428, 1 Feb 78.

Descriptors: *Two photon absorption, *Resonance absorption, *Molecular spectroscopy, Stokes radiation, Raman spectra, High resolution, Nitrogen oxides, Sulfur oxides, Reprints.

No abstract available.

AD-A065 337/8GA PC **A02**/MF **A01**
Cornell Univ., Ithaca, NY. Dept. of Materials Science and Engineering.
Mechanical Properties of Methanol Crazes in Poly(Methyl Methacrylate),
Edward J. Kramer, Heider G. Krenz, and Dieter G. Ast. 16 Aug 77, 19p ARO-12636.6-MS
Grant DAAG29-76-G-0103
Availability: Pub. in Jnl. of Polymer Science: Polymer Physics Edition, v16 p349-366 1978.

Descriptors: *Carbinols, *Polymethyl methacrylate, Crazing, Cracking(Fracturing), Mechanical properties, Reprints.
Identifiers: *Methanol.

No abstract available.

AD-A065 339/4GA PC **A02**/MF **A01**
University of Southern California, Los Angeles.
Electronic to Vibrational Energy Transfer, from Br (4 super 2 P1/2) to H2O,
A. Hariri, and C. Wittig. 25 Oct 77, 6p ARO-13711.7-P
Grant DAAG29-76-G-0124
Availability: Pub. in Jnl. of Chemical Physics, v68 n5 p2109-2113, 1 Mar 78.

Descriptors: *Bromine, *Electronic states, Excitation, Pulsed lasers, Dye lasers, Photolysis, Vibrational spectra, *Energy transfer, Reprints.
Identifiers: Water.

No abstract available.

AD-A065 340/2GA PC **A02**/MF **A01**
University of Southern California, Los Angeles.
Temperature Dependence of Electronic to Vibrational Energy Transfer from Br (4 super 2 P1/2) to super 12 CO2 and super 13 CO2,
Hanna Reisler, and Curt Wittig. 1 Jun 78, 8p ARO-13711.10-P
Grant DAAG29-76-G-0124
Availability: Pub. in Jnl. of Chemical Physics, v69 n8 p3729-3734, 15 Oct 78.

Descriptors: *Energy transfer, *Carbon dioxide, *Bromine, Thermal properties, Electronic states, Molecular vibration, Reprints.

No abstract available.

AD-A065 341/0GA PC **A02**/MF **A01**
Wayne State Univ., Detroit, MI. Dept. of Chemistry.
Enhanced Chemiluminescence from the Silica Gel Catalyzed Decomposition of a 1,2-Dioxetane,
Krzysztof A. Zaklika, Paul A. Burns, and A. Paul Schaap. 15 Jul 77, 5p ARO-13200.3-C
Grant DAAG29-76-G-0013
Availability: Pub. in Jnl. of the American Chemical Society, v100 n1 p318-320, 4 Jan 78.

Descriptors: *Oxetanes, *Decomposition, *Chemiluminescence, Silica gel, Catalysis, Reprints.
Identifiers: *Dioxetanes.

No abstract available.

AD-A065 375/8GA PC **A02**/MF **A01**
University of Southern California, Los Angeles. Dept. of Chemistry.
Wavelength Dependent Photoprocesses in Acenaphthaquinone,
Tai-Shan Fang, and Lawrence A. Singer. 24 Mar 78, 4p R-12, ARO-12816.6-C
Contract DAHC04-75-C-0093
Availability: Pub. in Jnl. of the American Chemical Society, v100 n19 p6276-6276, 13 Sep 78.

Descriptors: *Quinones, *Photochemical reactions, Phosphorescence, Light pulses, Excitation, Reprints.
Identifiers: *Acenaphthaquinone, Wavelengths.

No abstract available.

AD-A065 376/6GA PC **A02**/MF **A01**
Johns Hopkins Univ., Baltimore, MD. Dept. of Chemistry.
Semiempirical Potential Surfaces and Dynamical Considerations for Collisions between Alkali Metals and Molecular Oxygen: Li + O sub 2 and Na + O sub 2,
Millard H. Alexander. 27 Jun 78, 17p ARO-15557.4-C
Grant DAAG29-78-G-0110
Prepared in cooperation with Maryland Univ., College Park. Dept. of Chemistry.
Availability: Pub. in Jnl. of Chemical Physics, v69 n8 p3502-3517, 15 Oct 78.

Descriptors: *Oxygen, *Alkali metals, Surface properties, Diatomic molecules, Energy transfer, Reaction kinetics, Ionization, Reprints.
Identifiers: *Molecule molecule interactions.

No abstract available.

AD-A065 378/2GA PC **A02**/MF **A01**
Houston Univ., TX. Dept. of Chemistry.
Photochromism and Electrochromism in Amorphous Transition Metal Oxide Films,
Richard J. Colton, Alberto M. Guzman, and J. Wayne Rabalais. 6 Apr 77, 8p ARO-14361.20-C
Grant DAAG29-77-G-0054
Availability: Pub. in Accounts of Chemical Research, v11 p170-176 1978.

Descriptors: *Transition metal compounds, *Photochromism, Electrocoloration, Color centers, Amorphous materials, *Oxides, Reprints.

No abstract available.

AD-A065 393/1GA PC **A02**/MF **A01**
Oregon Univ., Eugene. Dept. of Physics.
Exchange and Relaxation Effects in Low-Energy Radiationless Transitions,
Mau Hsiung Chen, Bernd Crasemann, Michio Aoyagi, and Hans Mark. 24 Feb 78, 9p
Grant DAAG29-78-G-0010
Availability: Pub. in Physical Review A, v18 n3 p802-809 Sep 78.

Descriptors: *X ray spectra, *Auger electrons, *Atomic spectroscopy, Electron transitions, Relaxation, Zinc, Reprints.

No abstract available.

AD-A065 419/4GA PC **A02**/MF **A01**
North Carolina Univ. at Chapel Hill. Dept. of Chemistry.
Molecular Metals: New Organometallic Systems.
Technical rept.,
L. Alcacer, R. J. H. Clark, W. E. Hatfield, K. Klabunde, and J. S. Miller. 1 Mar 79, 13p Rept no. TR-7
Contract N00014-76-C-0816

Descriptors: *Organometallic compounds, *Chemical properties, *Molecular structure, Electrical conductivity, Solid state chemistry, Magnetic properties, Crystal structure, Complex compounds, Metal complexes.

The chemical and structural features of organometallic compounds which may have high electrical conductivities or other desirable solid state properties are described. Potential scientific and technological applications of conducting organometallic compounds are examined, and useful research directions are discussed. (Author)

AD-A065 432/7GA PC **A04**/MF **A01**
Air Force Inst. of Tech., Wright-Patterson AFB, OH.
Laser Induced Photophysics of Biacetyl.
Mater's thesis,
Thomas Joseph Quelly. Sep 78, 72p Rept no. AFIT-CI-79-88T

Descriptors: *Acetic anhydride, *Photochemical reactions, *Laser induced fluorescence, Electronic states, Excitation, Life expectancy, Yield, Quenching, Phosphorescence, Vapor phases, Emission spectra, Vibrational spectra, Theses.
Identifiers: *Butanedione.

The excited electronic states of biacetyl (CH3COCOCH3) have engaged the attention of many researchers over the past forty years. Interest has centered primarily on the lowest excited singlet state and the nearby triplet state lying slightly lower in energy. Early work involving biacetyl concentrated on the lifetime, yield, and quenching rates associated with the phosphorescence from triplet state molecules both in solution and in the vapor phase. Subsequent interest in biacetyl was related to its use as a gas phase emission standard and as a triplet energy acceptor in the study of triplet molecule participation in the photochemistry of other molecules. The literature on these aspects of the study of biacetyl has been extensively reviewed. More recent work involving biacetyl has used the behavior of this molecule to test theories of 'radiationless transitions'.

AD-A065 433/5GA PC **A02**/MF **A01**
Science Applications, Inc., Sunnyvale, CA.
Fluorine-19 and Carbon-13 NMR Spectra of Polyperfluorobutadiene,
Madeline S. Toy, and Roger S. Stringham. 1978, 8p AFOSR-TR-79-0148
Contract F44620-76-C-0027
Availability: Pub. in Applications of Polymer Spectroscopy, ch1 p1-5 1978.

Descriptors: Polybutadiene, *Nuclear magnetic resonance, Fluorine compounds, Isotopes, Solutions(Mixtures), Microstructure, Melts, Reprints.
Identifiers: *Poly(butadiene/fluoro), Fluorine 19, Carbon 13.

No abstract available.

AD-A065 435/0GA PC **A02**/MF **A01**
Hawaii Univ., Honolulu.
Cl-L sub II, III Fluorescent X-Ray Spectra Measurement and Analysis for the Molecular Orbital Structure of ClO4, ClO3, and ClO2,
Burton L. Henke, Rupert C. C. Perera, and David S. Urch. 28 Sep 77, 14p AFOSR-TR-79-0151
Grant AFOSR-75-2762
Availability: Pub. in Jnl. of Chemical Physics, v68 n8 p3692-3704, 15 Apr 78.

Descriptors: *Molecular structure, *Molecular orbitals, *X ray spectra, Perchlorates, Chlorates, Chlorites, Fluorescence, Reprints.

No abstract available.

AD-A065 436/8GA PC **A02**/MF **A01**
IRT Corp., San Diego, CA.
Chemi-Ionization in Collisions of Metastable Helium with Metastable Helium,
R. H. Neynaber, G. D. Magnuson, and S. Y. Tang. 19 Dec 77, 8p IRT-8173-001, AFOSR-TR-79-0150
Contract F49620-78-C-0015
Availability: Pub. in Jnl. of Chemical Physics, v68 n11 p5112-5117, 1 Jun 78.

Descriptors: *Helium, *Ionization, Cross sections, Molecular beams, Reaction kinetics, Reprints.
Identifiers: *Metastable state, *Molecule molecule interactions.

No abstract available.

AD-A065 492/1GA PC **A02**/MF **A01**
Rochester Univ., NY. Dept. of Chemistry.

Is Photon Angular Momentum Important in Molecular Collision Processes Occurring in a Laser Field,
Paul L. DeVries, and Thomas F. George. 1 May 78, 7p AFOSR-TR-79-0105
Contract F49620-78-C-0005, Grant NSG-2198
Sponsored in part by Grants NSF-CHE75-06775 and NSF-CHE77-27826.
Availability: Pub. in Physical Review A, v18 n4 p1751-1755 Oct 78.

Descriptors: *Momentum transfer, Coupling(Interaction), Laser beams, Phonons, Quantum theory, Reprints.
Identifiers: Molecule molecule interaction.

No abstract available.

AD-A065 495/4GA PC **A02**/MF **A01**
Colorado Univ., Boulder. Dept. of Chemistry.
The Electrochemical Behavior of Selenium and Selenium Compounds in Sodium Tetrachloroaluminate Melts,
J. Robinson, and R. A. Osteryoung. 7 Apr 78, 10p AFOSR-TR-79-0108
Grant AFOSR-76-2978
Availability: Pub. in Jnl. of the Electrochemical Society, v125 n9 p1454-1460 Sep 78.

Descriptors: *Selenium compounds, *Electrochemistry, Fused salts, Sodium compounds, Chlorine compounds, Aluminates, Reprints.
Identifiers: *Aluminic acid/chloro-(sodium-salt).

No abstract available.

ANL-78-XX-95 PC **A09**/MF **A01**
Argonne National Lab., IL.
Energy Level Structure and Transition Probabilities in the Spectra of the Trivalent Lanthanides in LaF sub 3.
W. T. Carnall, H. Crosswhite, and H. M. Crosswhite. 1978, 185p
Contract W-31-109-ENG-38

Descriptors: *Dysprosium ions, *Erbium ions, *Europium ions, *Gadolinium ions, *Holmium ions, *Lanthanum fluorides, *Lanthanum ions, *Neodymium ions, *Praseodymium ions, *Promethium ions, *Samarium ions, *Terbium ions, *Thulium ions, Absorption spectra, Coulomb field, Crystal doping, Crystal field, Doped materials, Energy levels, Energy-level transitions, F states, L-s coupling, Parity, Spin.
Identifiers: ERDA/640302, ERDA/360603.

For abstract, see ERA citation 04:020644.

BNL-24909 PC **A02**/MF **A01**
Brookhaven National Lab., Upton, NY.
Beam Foil Spectroscopy of Heavy Ions at Energies from 20 to 238 MeV.
K. W. Jones. 1978, 9p CONF-780988-5
Contract EY-76-C-02-0016
Fast ion spectroscopy, Lyon, France, 5 Sep 1978.

Descriptors: *Bromine ions, *Copper ions, *Gold ions, *Iodine ions, *Molybdenum ions, *Nickel ions, *Titanium ions, *Tungsten ions, Energy levels, Heavy ions, Ion spectroscopy, Lifetime, Mev range 10-100, Mev range 100-1000, Reviews.
Identifiers: ERDA/640301.

For abstract, see ERA citation 04:024751.

BNL-25133 PC **A02**/MF **A01**
Brookhaven National Lab., Upton, NY.
Negative Ion Source and Beam Development at BNL.
C. Lam, M. Grossman, V. Kovarik, R. Larson, and R. McKenzie-Wilson. 1978, 3p CONF-781113-26
Contract EY-76-C-02-0016
Conference on application of small accelerators, Denton, TX, USA, 6 Nov 1978.

Descriptors: *Neutral beam sources, *Tokamak devices, Hydrogen 1 minus beams, Hydrogen ions 1 minus, Kev range 100-1000, Magnetrons, Neutral atom beam injection, Penning ion sources, Performance.
Identifiers: ERDA/640300, ERDA/700205.

For abstract, see ERA citation 04:024750.

CONF-780988-4 PC **A02**/MF **A01**
Argonne National Lab., IL.
Lamb Shift and Fine Structure of n=2 in exp 35 Cl XVI.
H. G. Berry, R. DeSerio, and A. E. Livingston. 1978, 5p
Contract W-31-109-ENG-38
Fast ion spectroscopy, Lyon, France, 5 Sep 1978.

Descriptors: *Chlorine ions, *Quantum electrodynamics, Chlorine 35, Energy-level transitions, Fine structure, Lamb shift, Multicharged ions, Wavelengths.
Identifiers: ERDA/640302, ERDA/645400.

For abstract, see ERA citation 04:024753.

CONF-781113-27 PC **A02**/MF **A01**
Tennessee Univ., Knoxville. Dept. of Physics and Astronomy.
Failure of Single Electron Descriptions of Molecular Orbital Collision Processes.
S. B. Elston. 1978, 5p
Contract W-7405-ENG-26
Conference on application of small accelerators, Denton, TX, USA, 6 Nov 1978.

Descriptors: *Helium, *Ion-atom collisions, *Lithium ions, Cations, Energy-level transitions, Excitation, Inner-shell ionization, Many-body problem.
Identifiers: ERDA/640304.

For abstract, see ERA citation 04:024758.

COO-4694-1 PC **A02**/MF **A01**
Rochester Univ., NY.
Low Energy Ion-Molecule Reaction Dynamics and Chemionization Kinetics. Progress Report, February 1, 1978–January 31, 1979.
1979, 11p
Contract ER-78-S-02-4894

Descriptors: *Argon, *Carbon monoxide, *Hydrogen ions 2 plus, *Ion sources, *Nitrogen, Colliding beams, Construction, Direct reactions, Electric discharges, Ev range 01-10, Ion-molecule collisions, Ionization, Molecular beams, Radicals, Research programs.
Identifiers: ERDA/640304, ERDA/640301.

For abstract, see ERA citation 04:024760.

DOE/ER/70004-213 PC **A03**/MF **A01**
Tufts Univ., Medford, MA. Dept. of Physics.
Interfacing Theory and Experiment in Polarization Studies.
G. R. Goldstein, and M. J. Moravcsik. 1978, 34p
RLO-2230/T4-213
Contract EY-76-S-06-2230-004

Descriptors: *Atom collisions, *Nuclear reactions, *Particle interactions, Polarization, Polarized beams, Polarized targets, Scattering amplitudes.
Identifiers: ERDA/640304, ERDA/653003, ERDA/645201.

For abstract, see ERA citation 04:020664.

JINR-R-17-11341 PC **A02**/MF **A01**
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Neutron Physics.
Electronic Multiplet Splitting for Actinides with the (5F) exp 2 Configuration in Cubic Crystal Fields and Transition Probabilities Between Low-Lying Energy States.
T. Frauenkhaym. 1978, 12p
In Russian.
U.S. Sales Only.

Descriptors: *Actinides, Crystal field, Cubic lattices, Diagrams, Electronic structure, Energy-level transitions, F states, Ground states, Hamiltonians, Intermediate coupling, Matrix elements, Paramagnetism, Wave functions.
Identifiers: ERDA/640302, USSR.

For abstract, see Atomindex citation 09:412534.

LA-7401 PC **A05**/MF **A01**
Los Alamos Scientific Lab., NM.
Broadening of a Spectrum Line by Finite Spectrometer Resolution.
R. Engleman, Jr. Dec 78, 76p
Contract W-7405-ENG-36

Descriptors: *Absorption spectra, *Computer codes, *Emission spectra, *Spectrometers, Corrections, Doppler effect, Fortran, Functions, Gauss function, K codes, Line broadening, Lorentz invariance, Mathematical models, Resolution, S codes, Spectra, Voigt effect.
Identifiers: ERDA/640302, ERDA/440300.

For abstract, see ERA citation 04:024755.

MPI-PAE-Exp.El.-71 PC **A02**/MF **A01**
Max-Planck-Inst. fuer Physik und Astrophysik, Munich (Germany, F.R.).
Measurement of the Specific Primary Ionization of Helium and Neon by Fast Charged Particles.
K. Soechting. Jun 78, 16p
U.S. Sales Only.

Descriptors: *Helium, *Neon, Cherenkov counters, Ion beams, Ion-atom collisions, Ionization, Radiation detection, Spark counters.
Identifiers: ERDA/640304, West Germany.

For abstract, see Atomindex citation 09:412609.

NTIS/PS-79/0399/0GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Chemical Analysis Techniques of Trace Elements. Volume 2. 1976-1977 (A Bibliography with Abstracts).
Rept. for 1976-77,
Diane M. Cavagnaro. May 79, 245p*
See also Volume 1, 1964-1975, NTIS/PS-78/0321.

Descriptors: *Bibliographies, *Chemical analysis, *Trace elements, Laboratory equipment, Environmental surveys, Polarography, Spectrochemical analysis, Gas chromatography, Ion exchanging, Separation, Extraction, Distillation, X ray analysis, Fluorescence, Neutron activation analysis.

Research reports on analytical techniques for trace elements are cited. Many of the reports pertain to pollution detection. Some of the techniques include polarography, spectroscopy, gas chromatography, ion exchanging, separation, extraction, distillation, x-ray fluorescence, and neutron activation analysis. (This updated bibliography contains 236 abstracts, none of which are new entries to the previous edition.)

NTIS/PS-79/0400/6GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Chemical Analysis Techniques of Trace Elements. Volume 3. 1978-March, 1979 (A Bibliography with Abstracts).
Rept. for 1978-Mar 79,
Diane M. Cavagnaro. May 79, 175p*
Supersedes NTIS/PS-78/0322. See also Volume 1, 1964-1975, NTIS/PS-78/0321 and Volume 2, 1976-1977, NTIS/PS-79/0399.

Descriptors: *Bibliographies, *Chemical analysis, *Trace elements, Laboratory equipment, Environmental surveys, Polarography, Spectrochemical analysis, Gas chromatography, Ion exchanging, Separation, Extraction, Distillation, X ray analysis, Fluorescence, Neutron activation analysis.

This bibliography contains citations describing different chemical analysis techniques and equipment used in trace element analysis. Many of the reports pertain to pollution detection. Some of the techniques include polarography, spectroscopy, gas chromatography, ion exchanging, separation, extraction, distillation, x-ray fluorescence analysis, and neutron activation analysis. (This updated bibliography contains 166 abstracts, 134 of which are new entries to the previous edition.)

N79-19114/4GA PC **A02**/MF **A01**
National Aeronautics and Space Administration, Washington, DC.
Determination of Vibration-Rotation Lines Intensities from Absorption Fourier Spectra.
J. Y. Mandin. Mar 79, 18p NASA-TM-75428
Contract NASW-3199
Tran-Transl. Into English from J. Optics (Paris) V. 9, No. 5 p 311-316. Subm-Transl. By Kanner (Leo) Associates, Redwood City, Calif.

Descriptors: *Absorption spectra, *Line spectra, *Spectrometers, Fourier analysis, Magnitude, Spectral bands, Spectral line width.
Identifiers: Translations, France, Fourier spectroscopy, Water.

For abstract, see STAR 1710

N79-19478/3GA PC **A02**/MF **A01**
National Aeronautics and Space Administration, Washington, DC.
Application of Interferential Correlation of Spectrum to the Detection of Atmospheric Pollutants.
G. Fortunato. Mar 79, 25p NASA-TM-75427
Contract NASW-3199
Tran-Transl. Into English from J. Of Optics (Paris), V. 9, No. 5, 1978 p 281-290. Misc-Original Language Document Was Announced as A79-14479. Subm-Transl. By Kanner (Leo) Associates, Redwood City, CA.

Descriptors: Air pollution, *Interferometry, *Luminance, *Spectral correlation, Fourier transformation, Mounting, Nitrogen oxides, Sulfur oxides.
Identifiers: Translations, France, *Air pollution detection, *Gas analysis, Chemical analysis, Fourier transform spectroscopy.

For abstract, see STAR 1710

ORO-2591-88 PC **A05**/MF **A01**
Georgia Inst. of Tech., Atlanta. School of Physics.
Scattering of Hydrogen from Surfaces. Progress Report No. 2, November 1, 1977--November 1, 1978.
E. W. Thomas, K. O. Legg, J. E. Harriss, and W. A. Metz. 1 Nov 78, 81p
Contract EY-76-S-05-2591

Descriptors: *Copper, *Hydrogen ions 1 plus, *Niobium, *Beryllium, *Iron, *Oxygen, *Aluminium, *Argon ions, Angular distribution, Collisions, Electric charges, Energy spectra, Flux density, Ion collisions, Kev range 01-10, Kev range 10-100, Recoils, Surfaces, Adsorption, Auger effect, Cross sections, Sputtering, Kev range 100-1000, Kinetics.
Identifiers: ERDA/640301.

For abstract, see ERA citation 04:024752.

ORO-4881-24 PC **A03**/MF **A01**
Louisiana State Univ., Baton Rouge.
Electron-Impact Excitation of N = 2 Levels of Helium at Intermediate Energies.
K. Bhadra, J. Callaway, and R. J. W. Henry. 1979, 43p
Contract EY-76-S-05-4881

Descriptors: *Helium, Coupling, Cross sections, Differential cross sections, Electron-atom collisions, Energy levels, Ev range 10-100, Excitation, Ground states, P states, S states.
Identifiers: ERDA/640304.

For abstract, see ERA citation 04:024763.

PAT-APPL-901 048/GA PC **A02**/MF **A01**
Department of Energy, Washington, DC.
Method and Apparatus for Improved Optoacoustic Spectroscopy.
Patent Application,
N. M. Amer. Filed 28 Apr 78, 16p
This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

Descriptors: *Laser spectroscopy, Aerosols, Equipment, Gases, Liquids, Solids, Uses.
Identifiers: ERDA/400104, *Patent applications.

For abstract, see ERA citation 04:024076.

PB-283 996/7GA PC **A06**/MF **A01**
National Bureau of Standards, Washington, DC.
Journal of Research of the National Bureau of Standards. Volume 83, Number 2, March-April 1978.
Bi-monthly pub.
1978, 115p
See also Volume 83, No. 1, PB-281 311.

Descriptors: *Physical chemistry, Aluminum oxide, Viscosity, Mathematical models, Lasers, Dissociation, Ethylene, Thermodynamics, Phase transformation, Ruby, Light scattering, Osmometers, Molecular weights, Titanium, Standards, Electron paramagnetic resonance, Polymers, Density(Mass/volume), Polyethylene.
Identifiers: Standard reference materials.

Contents:
- TEA laser induced multiphoton dissociation of ethylene in a collisional regime, Model and experiment;
- Thermodynamic study of the alpha goes to beta phase transformation in titanium by a pulse heating method;
- An intensity standard for electron paramagnetic resonance using chromium-doped corundum (Al2O3-Cr(+3));
- Behavior of an isolated polymer chain residing in a density gradient of segments;
- The characterization of linear polyethylene SRM's 1482, 1483, and 1484. I. Introduction;
- The characterization of linear polyethylene SRM's 1482, 1483, and 1484. II. Number-average molecular weights by membrane osmometry;
- The characterization of linear polyethylene SRM's 1482, 1483, and 1484. III. Weight-average molecular weights by light scattering;
- The characterization of linear polyethylene SRM's 1482, 1483, and 1484. IV. Limiting viscosity numbers by capillary viscometry.

PB-285 385/1GA
(Order as PB-283 996, PC **A06**/MF **A01**)
National Bureau of Standards, Washington, DC. Inst. for Materials Research.
TEA Laser Induced Multiphoton Dissociation of Ethylene in a Collisional Regime: Model and Experiment,
N. C. Peterson, R. G. Manning, and W. Braun. 18 Aug 77, 9p
Contract ERDA-EA-77-A-01-6010
Paper presented at the Physics of Quantum Electronics Winter Colloquium on Laser Induced Chemistry (2nd), held at Park City, UT, on Feb. 13-16, 1977.
Included in Jnl. of Research of the National Bureau of Standards, v83 n2, p 117-126, Mar-Apr 78.

Descriptors: *Dissociation, *Ethylene, Mathematical models, Reaction kinetics, Photolysis, Laboratory equipment.
Identifiers: *Laser enhanced reactions.

The focused beam of a pulsed CO2 TEA laser was used to photodissociate ethylene gas at total pressures of 100-300 torr. The laser pulse induces molecular hydrogen elimination to yield primarily C2H2 and H2 in a large excess of helium to eliminate heating. An investigation was made of the dependence of product yield on wavelength, inert gas pressure, ethylene pressure and intensity. Photochemical yield was followed over a 10,000 fold range. Its dependence was investigated employing alternate methods of focusing the laser beam, one of which results in a constant volume geometry. A photometric method of characterizing this focal zone is described. A 'structureless' computer model of the laser pumping process involving coupled rate equations and phenomenological absorption and stimulated emission coefficients is described. The model assumes rapid intramolecular energy transfer between the various vibrational modes throughout the entire vibrational manifold, and rapid equilibration of rotational states. The model includes stimulated emission and deactivating collisions, and predicts a product yield versus intensity dependence that does not exhibit threshold behavior in agreement with experiment. Calculated dependences of product yield on laser power for various parameters are given in order to relate the model to various photolysis experiments.

PB-285 387/7GA
(Order as PB-283 996, PC **A06**/MF **A01**)
National Bureau of Standards, Washington, DC. Inst. for Materials Research.
An Intensity Standard for Electron Paramagnetic Resonance Using Chromium-Doped Corundum (Al2O3:Cr3+),
Te-Tse Chang, Donald Foster, and Arnold H. Kahn. 5 Oct 77, 32p
Included in Jnl. of Research of the National Bureau of Standards, v83 n2, p 133-164, Mar-Apr 78.

Descriptors: *Electron paramagnetic resonance, Intensity, Standards, Additives, Chromium, Ruby, Surfaces, Comparison.
Identifiers: *Standard reference materials.

The authors report on the preparation of a standard reference material (SRM), made of single-crystal chromium-doped corundum (synthetic ruby), for use as an intensity standard in electron paramagnetic resonance (EPR) experiments. The SRM can be used to measure, by comparison, the number of spins in an unknown test sample.

PB-285 388/5GA
(Order as PB-283 996, PC **A06**/MF **A01**)
National Bureau of Standards, Washington, DC. Inst. for Materials Research.
Behavior of An Isolated Polymer Chain Residing in a Density Gradient of Segments,
E. A. DiMarzio, and C. M. Guttman. 29 Nov 77, 3p
Included in Jnl. of Research of the National Bureau of Standards, v83 n2, p 165-168, Mar-Apr 78.

Descriptors: *Polymers, Density(Mass/volume), Surfaces, Spatial distribution.
Identifiers: Wiener integrals, *Molecular conformations, Numerical solution, Monomers.

The Wiener integral (path integral, functional integral) technique is used to determine the equation describing the probability distribution of a polymer molecule immersed in a non-uniform distribution of monomer units. This result should be useful whenever there is a spatial variation of polymer density, such as at an interface or surface.

PB-285 389/3GA
(Order as PB-283 996, PC **A06**/MF **A01**)
National Bureau of Standards, Washington, DC. Inst. for Materials Research.
The Characterization of Linear Polyethylene SRM's 1482, 1483 and 1484. I. Introduction,
Peter H. Verdier, and Herman L. Wagner. 19 Oct 77, 9p
Included in Jnl. of Research of the National Bureau of Standards, v83 n2, p 169-178, Mar-Apr 78.

Descriptors: *Polyethylene, Molecular weight, Viscosity, Standards.
Identifiers: *Standard reference materials.

The National Bureau of Standards has issued a series of three linear polyethylene Standard Reference Materials, SRM 1482, 1483, and 1484. These polyethylenes have molecular weights of the order of 10,000, 30,000, and 100,000 g/mol, respectively, and ratios M(w)/M(n) of weight- to number-average molcular weight of the order of 1.2. Their number-average molecular weights (by membrane osmometry), weight-average molecular weights (by light scattering), and limiting viscosity numbers in two solvents (by capillary viscometry) are certified; the procedures employed are described in subsequent papers in this series. In the present paper, the authors describe the preparation of the materials and some of their general properties.

PB-285 390/1GA
(Order as PB-283 996, PC **A06**/MF **A01**)
National Bureau of Standards, Washington, DC. Inst. for Materials Research.
The Characterization of Linear Polyethylene SRM's 1482, 1483, and 1484. II. Number-Average Molecular Weights by Membrane Osmometry,
Herman L. Wagner, and Peter H. Verdier. 19 Oct 77, 6p
Included in Jnl. of Research of the National Bureau of Standards, v83 n2, p 179-184, Mar-Apr 78.

Descriptors: *Polyethylene, *Molecular weight, Standards, Osmometers, Membranes, Viscosity.
Identifiers: *Standard reference materials.

Linear polyethylene Standard Reference Materials SRM 1482, 1483, and 1484 are certified for number-average molecular weight M(n). In this paper the experimental procedures employed for the determination of M(n) for these materials by membrane osmometry are described, and the techniques used to analyze the data and to estimate limits of systematic error are discussed.

PB-285 391/9GA (Order as PB-283 996, PC **A06**/MF **A01**)
National Bureau of Standards, Washington, DC. Inst. for Materials Research.
The Characterization of Linear Polyethylene SRM's 1482, 1483, and 1484. III. Weight-Average Molecular Weights by Light Scattering,
Charles C. Han, Peter H. Verdier, and Herman L. Wagner. 13 Oct 77, 9p
Included in Jnl. of Research of the National Bureau of Standards, v83 n2, p 185-194, Mar-Apr 78.

Descriptors: *Polyethylene, *Molecular weight, Light scattering, Standards.
Identifiers: *Standard reference materials.

Linear polyethylene Standard Reference Materials SRM 1482, 1483, and 1484 are certified for weight-average molecular weight M(w). In this paper the experimental procedures employed for the determination of M(w) for these materials by light scattering are described, and the techniques used to analyze the data and to estimate limits of systematic error are discussed.

PB-285 392/7GA (Order as PB-283 996, PC **A06**/MF **A01**)
National Bureau of Standards, Washington, DC. Inst. for Materials Research.
The Characterization of Linear Polyethylene SRM's 1482, 1483, and 1484. IV. Limiting Viscosity Numbers by Capillary Viscometry,
Herman L. Wagner, and Peter H. Verdier. 19 Oct 78, 37p
Included in Jnl. of Research of the National Bureau of Standards, v83 n2, p 195-202, Mar-Apr 78.

Descriptors: *Polyethylene, *Viscosity, Standards, Viscometers, Molecular weight.
Identifiers: *Standard reference materials, Benzene/trichloro, Naphthalene/chloro.

Linear polyethylene Standard Reference Materials SRM 1482, 1483, and 1484 are certified for limiting viscosity number in 1,2,4-trichlorobenzene and 1-chloronaphthalene at 130C. In this paper the experimental procedures employed for the determination of limiting viscosity numbers for these materials by capillary viscometry are described, and the techniques used to analyze the data and to estimate limits of systematic error are discussed.

PB-293 144/2GA PC **A03**/MF **A01**
Chemical Systems, Inc., Irvine, CA.
Development of Dry-RO (Trade Mark) Membranes from Sulfonated Cellulose Acetates and Quaternized Cellulose Acetate Carbamates.
Final rept. 1 Dec 76-Nov 78,
R. F. Kesting. 1978, 47p W79-05045, OWRT-7520(1)
Contract DI-14-34-0001-7520

Descriptors: *Membranes, *Cellulose acetate, Feasibility, Carbamates, Sulfonates, Quaternary ammonium salts, Synthesis(Chemistry), Esters, Performance evaluation.
Identifiers: *Reverse osmosis desalination, Monomers.

The program treated two aspects of ionogenic cellulosic reverse osmosis membranes: (1) The feasibility of incorporating anionic (sulfonate groups) charges into cellulose acetate (CA); and (2) the feasibility of the covalent attachment of quaternary ammonium groups via carbamate - rather than ester - linkages. The synthesis of anionic cellulose triesters (ACTEs), i.e. sulfonated CAs reacted the free OH groups of CA with o-sulfobenzoic anhydride. Precipitation of this polymer into aqueous sodium bicarbonate produced the sodium salt. The addition of the anhydride to CA was found to be nearly quantitative. Permeability increased with increasing ion exchange capacity (I.E.C.). The synthesis of aliphatic sulfonates was effected via sodium bisulfite addition to CA mixed esters containing terminal olefinic groups, e.g. CA undecylenate. Membranes of the sodium salt of CA 11-sulfoundecanoate were the best developed on the ACTE program. ACTE development may be the preferred path for future cellulosic RO membrane development. The second part of the program resulted in the simplified approach of in situ formation of CA carbamates. This revolutionary approach consisted of preparing blocked isocyanate monomers bearing quaternary ammonium groups and the inclusion of these monomers in ordinary CA casting solutions such that they wound up incorporated within the final membrane.

PB-293 171/5GA PC **A09**/MF **A01**
Little (Arthur D.), Inc., Cambridge, MA.
Ferroalloy Process Emissions Measurement.
Final rept. Nov 77-Mar 78,
J. L. Rudolph, J. C. Harris, Z. A. Grosser, and P. L. Levins. Feb 79, 191p EPA/600/2-79/045
Contract EPA-68-02-2150

Descriptors: *Air pollution control, *Ferroalloys, *Metallurgical furnaces, Sites, Metal industry, Sampling, Chemical analysis, Gas analysis, Extraction, Mass spectroscopy, Ferromanganese, Particles, Concentration(Composition), Performance evaluation, Aromatic polycyclic hydrocarbons, Inorganic compounds, Scrubbers, Atomic spectroscopy.
Identifiers: *Air pollution sampling, *Air pollution detection, *Venturi scrubbers, Air pollution control equipment, Procedures.

The report gives results of sampling and analysis to characterize and quantify particulate, organic, and inorganic chemical emissions in effluents from a totally sealed metallurgical furnace at a ferroalloy plant. Effluents were sampled downstream of a venturi scrubber during silicomanganese production (Test I) and upstream of the scrubber during ferromanganese production (Test II). Sampling and analysis methodology was essentially that of EPA's Level 1 Environmental Assessment procedure, supplemented by a specific analysis of polynuclear aromatic hydrocarbons (PAH). Good agreement was observed between the results of Level 1 organic analysis and the specific analysis of PAH. Good agreement was also found between the atomic absorption and spark source mass spectroscopic analyses of As and Sb. Because the tests involved different ferroalloy production processes, their results are not a quantitative measure of venturi scrubber efficiency. However, the data imply good particulate removal efficiency. The venturi scrubber also appears to be effective for removal of polynuclear aromatics, especially species in the higher molecular weight range.

PB-293 226/7GA PC **A03**/MF **A01**
Environmental Sciences Research Lab., Research Triangle Park, NC.
Hydrocarbons in Houston Air.
Rept. for Sep 73-Apr 74,
William A. Lonneman, George R. Namie, and Joseph J. Bufalini. Feb 79, 44p EPA/600/3-79/018

Descriptors: *Gas analysis, *Hydrocarbons, Chemical analysis, Sampling, Nitrogen oxides, Exhaust emissions, Industrial wastes, Combustion products, Texas.
Identifiers: *Air pollution detection, *Houston(Texas).

Ambient air samples were collected in Houston downtown and industrial areas to determine hydrocarbon composition and concentrations. Twenty-one samples were collected on three days of sampling: September 1, 1973, and January 30 and April 2, 1974. The results of the detailed hydrocarbon analyses of these samples are presented and suggest that both vehicular and industrial sources of hydrocarbons are important. Some of these samples were collected during periods of extremely stagnated meteorological conditions. It was observed that although the total nonmethane hydrocarbons were high, they did not exceed 10 ppmC. Measurements of nitrogen oxides were made for some of these samples. These samples suggested that the NMHC/NOx ratio in the Houston area was not atypical, usually ranging from 10/1 to 20/1.

PB-293 227/5GA PC **A03**/MF **A01**
Environmental Sciences Research Lab., Research Triangle Park, NC.
Non-Urban Hydrocarbon Concentrations in Ambient Air North of Houston, Texas.
Rept. for Jan-Apr 78,
Robert L. Seila. Feb 79, 38p EPA/600/3-79/010

Descriptors: *Gas analysis, *Hydrocarbons, *Methane, *Carbon monoxide, *Vegetation, Sources, Air pollution, Sampling, Chemical analysis, Sites, Laboratory equipment, Concentration(Composition), Gas chromatography, Texas.
Identifiers: Houston(Texas), *Air pollution detection, *Air pollution sampling.

In January 1978, a study was undertaken at Jones State Forest, 38 miles north of Houston, Texas, to determine the concentrations of non-methane hydrocarbons, methane, and carbon monoxide; to detail the composition of hydrocarbons (especially of the vegetation); and to discover the sources of non-methane hydrocarbons. Thirteen 3-hour integrated Tedlar bag samples and five grab samples using stainless steel cans were collected over a 39-hour period. The samples were returned to the Research Triangle Park laboratory for analysis, where the can samples showed lower non-methane hydrocarbon concentration values that did the bag samples. Sources of paraffins (72% of the non-methane hydrocarbons) and the other hydrocarbons were found to be: vehicular exhaust (35%), the forest's vegetation (2%), the city of Houston (22%), and the region between Houston and the forest (32%). Isoprene and alpha-pinene were the vegetative hydrocarbons noted, with the latter showing a distinctive 24-hour cycle of concentration variation.

PB-293 267/1GA PC **A02**/MF **A01**
Bureau of Mines, Reno, NV. Reno Metallurgy Research Center.
Catalytic Properties of Natural and Rare-Earth-Promoted Manganese Nodules.
Rept. of investigations,
E. F. Ferrell, L. J. Nicks, and D. J. Bauer. 1979, 13p BUMINES-RI-8330

Descriptors: *Catalysis, *Rare earth minerals, Oxidation, Gas chromatography, Combustion, Ion exchanging.
Identifiers: *Manganese nodules.

The Bureau of Mines, U.S. Department of the Interior, studied the use of manganese sea nodules for catalytic oxidation in air of 1 pct carbon monoxide, 1 pct propane, and 1 pct methane. Catalysts were prepared from both Pacific Ocean and Atlantic Ocean nodules and compared with a platinum catalyst using a fixed-bed, steady-state microreactor with gas chromatographic analysis. Combustion temperatures with manganese nodules were 50 to 100 degrees C lower than those with the platinum catalyst. Ion-exchange addition of rare-earth promotors to the nodule catalyst decreased combustion temperatures an additional 5 to 45 degrees C.

PB-293 269/7GA PC **A02**/MF **A01**
Environmental Sciences Research Lab., Research Triangle Park, NC.
Oxidant Formation in the Generation of Ozone,
Bruce W. Gay, Jr., George R. Namie, and Joseph J. Bufalini. Feb 79, 25p EPA/600/3-79/016

Descriptors: *Air pollution, *Ozone, *Oxidizers, *Gas analysis, Ultraviolet spectroscopy, Photolysis, Electric discharge, Samples, Colorimetric analysis.

Ozone samples generated by UV photolysis and silent electric discharge upon air or oxygen were examined to determine if other oxidants were formed. Chemical and physical methods (IR and UV spectroscopy) failed to show the presence of such oxidants. Absence of such oxidants was also indicated by the excellent agreement between analytical results from UV photometry and gas phase titration. Ozone measurements by the colorimetric 1 percent neutral buffered potassium iodide method were biased 10-30 percent positive compared to UV photometry. A colorimetric method employing a solution of cyclohexene-dimethanol and ferrous ammonium sulfate (CHD), which is

claimed to measure singlet oxygen and/or other oxidants along with ozone, proved to have a different stoichiometry in the presence and absence of oxygen. These latter results were interpreted to mean that the high response of CHD to ozonized air/oxygen streams does not indicate the presence of nonozone oxidants; rather, it reflects a greater-than-stoichiometric response of the CHD reagent to ozone.

PB-293 331/5GA PC **A02**/MF **A01**
Bureau of Mines, Albany, OR. Albany Metallurgy Research Center.
Analysis of Steelmaking Slags by Atomic Absorption Spectrophotometry Using Pressure Dissolution.
Rept. of investigations 1979,
Raymond F. Farrell, Alick J. Mackie, and W. R. Lessick. 1979, 13p BUMINES-RI-8336

Descriptors: *Chemical analysis, *Slags, *Atomic spectroscopy, Absorption spectra, Pressure, Spectrophotometry, Aluminum oxides, Calcium oxides, Manganese oxides, Magnesium oxides, Silicon oxides, Spectrochemical analysis.

A goal of the U.S. Department of the Interior, Bureau of Mines, is the advancement of minerals technology through the development of improved metals and minerals processing. In support of this goal, the Albany Metallurgy Research Center has developed atomic absorption spectrographic methods for the rapid analysis of Al2O3, CaO, Fe2O3, MgO, MnO, and SiO2 in steelmaking slags. The application of these methods is discussed using an inexpensive pressure dissolution system. The overall coefficient of variation is 5 pct. The accuracy is the same as the reproducibility.

PB-293 359/6GA PC **A02**/MF **A01**
Auburn Univ., AL. Water Resources Research Inst.
Identification of Major Organic Constituents in Textile Waste Water Resulting from the Use of Sulfur Dyes.
Completion rept.,
B. Lewis Slaten. Mar 79, 21p WRRI-BULL-35, W79-05230, OWRT-A-053-ALA(1)

Descriptors: *Organic compounds, *Water analysis, *Dyes, Textile processes, Dyeing, Chemical analysis, Sulfur, Separation, Gas chromatography, Mass spectroscopy, Infrared spectroscopy, Water pollution.
Identifiers: *Water pollution detection, Liquid chromatography, XAD resins, Procedures, Silica gel chromatography.

The waste water from textile dyeing facilities contains many organic contaminants. A laboratory simulation of the sulfur dyeing of cotton fabrics was done in order to determine the nature of the by-products normally discharged in textile waste water systems. The organic constituents resulting from these laboratory dyeings were removed from water solution using liquid-solid chromatography and XAD-2 resin. The organic fractions so obtained in several eluting solvents were further separated by a second separation using silica gel chromatography. These fractions were then examined using various analytical techniques. It was determined that the waste water resulting from sulfur dyeings contained in excess of 200 different organic constituents varying in molecular weight and nature of functional groups.

PB-293 360/4GA PC **A05**/MF **A01**
Little (Arthur D.), Inc., Cambridge, MA.
Measurement of PCB Emissions from Combustion Sources.
Final rept. Dec 76-Dec 78,
P. L. Levins, C. E. Rechsteiner, and J. L. Stauffer. Feb 79, 90p EPA/600/7-79/047
Contract EPA-68-02-2150

Descriptors: *Gas analysis, *Gas chromatography, *Mass spectroscopy, Chemical analysis, Combustion products, Industrial wastes, Chlorine organic compounds, Calibrating, Samples, Substitutes.
Identifiers: *Air pollution detection, *Polychlorinated biphenyls, Biphenyl/perchloro, Electron capture gas chromatography.

The report describes a gas chromatographic/mass spectrometric (GC/MS) procedure that overcomes problems encountered when using GC procedures (previously used to determine polychlorinated biphenyls (PCBs) in solids and water) on emissions from combustion sources. The GC/MS procedure, which relies on selected mass scanning in restricted regions of the chromatograms, was developed because in the combustion process the distribution pattern of the individual PCBs changes, rendering invalid the pattern matching approach used with the gas chromatographic/electron capture detection (GC/ECD) method.

PB-293 363/8GA PC **A17**/MF **A01**
Southern Research Inst., Birmingham, AL.
Proceedings: Advances in Particle Sampling and Measurement (Asheville, NC, May 1978).
Rept. for Jan 77-Sep 78,
W. B. Smith. Feb 79, 391p EPA/600/7-79/065
Contract EPA-68-02-2131

Descriptors: *Air pollution control, *Particles, *Gas analysis, Sampling, Laboratory equipment, Smelters, Paper industry, Combustion products, Industrial wastes, Aerosols, Light scattering, Impactors, Chemical analysis, Boilers, Furnaces, Kilns, Particle size distribution, Scrubbers, Electrostatic precipitators, Plumes, Design criteria, Fines, Performance evaluation, Trace elements, Fly ash, Calibrating.
Identifiers: Computer aided analysis, *Air pollution detection, Baghouses, Wet methods.

The proceedings consist of 17 papers on improved instruments and techniques for sampling and measuring particulate emissions and aerosols; e.g., cascade impactors, cyclone collectors, and diffusion-battery/nuclei-counter combinations. Transmissometers and instruments for measuring scattered light were used for continuous monitoring of emissions from a secondary lead smelter and from three pulp and paper mill sources (a wood-waste-fired power boiler, a kraft recovery furnace, and a lime kiln). Also discussed were: computer-based data reduction for plotting curves of particle size distribution; equipment for generating aerosols and its use in calibrating instruments; analysis for trace elements in fly ash; and sources of sampling errors. Applications of improved techniques for evaluating emission control devices included: a wet impingement technique for measuring particle sizes in wet scrubbers; use of real-time instruments in studying the dynamic behavior of baghouses; and measurement of fractional collection efficiency and detection of fly ash entrainment in electrostatic precipitators.

PB-293 577/3GA PC **A02**/MF **A01**
Denver Univ., CO. Dept. of Chemistry.
On the Partial Dehydration of Aluminum Nitrate Nonahydrate to Form the Hexahydrate. (I). A Computational Equilibrium Investigation of the Thermal Decomposition of Aluminum Nitrate Nonahydrate. (II).
Open file rept. 1 Oct 77-30 Sep 78, (Final),
Z. S. Herman, John R. Riter, Jr., and A. R. Chughtai. 8 Nov 78, 18p BUMINES-OFR-19-79
Grant G0177154

Descriptors: *Pyrolysis, *Thermodynamics, *Decomposition reactions, Reaction kinetics, Inorganic nitrates, Molecular structure, Dehydration, Gibbs free energy, Enthalpy, Entropy, Specific heat.
Identifiers: *Aluminum nitrates, Chemical reaction mechanisms.

The work on the thermodynamics of aluminum nitrate nonahydrate decomposition has led to two manuscripts. The first, 'On the partial dehydration of aluminum nitrate nonahydrate to form the hexahydrate,' suggests mechanistic interpretations for the first two steps in the thermal decomposition process. The second, 'A computational equilibrium investigation of the thermal decomposition of aluminum nonahydrate,' covers the work on the thermal decomposition to diaspore and alumina. A discussion is given on the condition of kinetic control of the decomposition reactions of nitrogen in the +5 valence state (HNO3 vapor and N2O5) to uneconomical and undesirable gaseous nitrogen. One of the conclusions of the computations is that diaspore is the stable solid product below 200C and alumina above this temperature.

PUC-TN-2/78 PC **A02**/MF **A01**
Pontificia Univ. Catolica do Rio de Janeiro (Brazil). Inst. de Fisica.
Hydrogen Atoms in the Presence of a Homogeneous Magnetic Field. A Variational Approach.
H. S. Brandi, and B. Koiller. Feb 78, 12p
U.S. Sales Only.

Descriptors: *Hydrogen, Eigenfunctions, Electronic structure, Emission spectra, Energy levels, Excited states, Ground states, Hamiltonians, Harmonic oscillators, Magnetic fields, Three-dimensional calculations, Variational methods, Wave functions.
Identifiers: ERDA/640302, Brazil.

For abstract, see Atomindex citation 09:412501.

UCRL-81947 PC **A02**/MF **A01**
California Univ., Livermore. Lawrence Livermore Lab.
K-L And L-K Vacancy Sharing in Ion--Atom Collisions.
R. J. Fortner. Nov 78, 5p CONF-781113-25
Contract W-7405-ENG-48
Conference on application of small accelerators, Denton, TX, USA, 6 Nov 1978.

Descriptors: *Ion-atom collisions, Electronic structure, Holes, Inner-shell ionization, K shell, L shell, Molecular models, Molecules, Reviews, Symmetry.
Identifiers: ERDA/640304.

For abstract, see ERA citation 04:024765.

8. EARTH SCIENCES AND OCEANOGRAPHY

8A. Biological Oceanography

AD-A064 894/9GA PC **A02**/MF **A01**
Woods Hole Oceanographic Institution, MA.
Photoacoustic Spectroscopic Analysis of Marine Phytoplankton.
Technical rept.,
Peter B. Ortner, and Allan Rosencwaig. 17 Mar 77, 9p Rept nos. WHOI-79-15, WHOI-CONTRIB-3922
Contract N00014-66-C-0241, Grant NSF-GA-002783
Availability: Pub. in Hydrobiologia, v56 n1 p3-6 1977.

Descriptors: *Phytoplankton, Spectroscopy, Microphones, Chlorophylls, Absorption spectra, Spectrophotometry, Cells(Biology), Freeze drying, Marine biology, Visible spectra, Algae, Reprints.
Identifiers: *Photoacoustics, PAS(Photoacoustic Spectroscopy), Spectroscopic analysis.

No abstract available.

AD-A065 021/8GA PC **A02**/MF **A01**
Woods Hole Oceanographic Institution, MA.
Variability in Zooplankton Biomass Distribution in the Northern Sargasso Sea: The Contribution of Gulf Stream Cold Core Rings.
Technical rept.,
Peter B. Ortner, Peter H. Wiebe, Loren Haury, and Steven Boyd. Sep 77, 18p Rept nos. WHOI-79-14, WHOI-CONTRIB-3939
Contracts N00014-66-C-0241, N00014-74-C-0262
Sponsored in part by Grant NSF-DES74-02783.
Availability: Pub. in Fishery Bulletin, v76 n2 p323-334 1978.

Descriptors: *Zooplankton, Sargasso Sea, Distribution, Reprints.
Identifiers: North Atlantic Ocean, Gulf stream.

No abstract available.

AD-A065 050/7GA PC **A03**/MF **A01**
Woods Hole Oceanographic Institution, MA.

Limits of Nematoscelis Megalops in the North-Western Atlantic in Relation to Gulf Stream Cold Core Rings. I. Horizontal and Vertical Distributions,
Peter H. Wiebe, and Steven H. Boyd. 12 Jul 77, 30p Rept nos. WHOI-79-16, WHOI-CONTRIB-3726
Contracts N00014-66-C-0241, N00014-74-C-0262
Sponsored in part by Grant, NSF-DES77-02783.
Availability: Pub in Jnl. of Marine Research, v36 n1 p119-142 1978.

Descriptors: *Zooplankton, *Crustacea, North Atlantic Ocean, Oceanographic data, Reprints, Gulf Stream.
Identifiers: *Euphausiids, *Nematoscelis megalops, Ocean temperature, Distribution(Property).

No abstract available.

AD-A065 277/6GA PC **A02**/MF **A01**
Woods Hole Oceanographic Institution, MA.
Limits of 'Nematoscelis megalops' in the Northwestern Atlantic in Relation to Gulf Stream Cold Core Rings. II. Physiological and Biochemical Effects of Expatriation.
Technical rept.,
Steven H. Boyd, Peter H. Wiebe, and James L. Cox. 12 Jul 77, 24p Rept nos. WHOI-79-13, WHOI-CONTRIB-3938
Contracts N00014-66-C-0241, N00014-74-C-0262
Sponsored in part by Grant NSF-DES74-02783. Prepared in cooperation with California Univ., Santa Barbara Marine Science Inst. See also AD-A065 050.
Availability: Pub. in Jnl. of Marine Research, v36 n1 p143-159 1978.

Descriptors: *Zooplankton, North Atlantic Ocean, Gulf Stream, Metabolism, Lipids, Carbon, Respiration, Reprints.
Identifiers: *Nematoscelis Megalops.

No abstract available.

N79-19428/8GA PC **A05**/MF **A01**
Brevard County Health Dept., Titusville, FL.
Vegetation and Other Parameters in the Brevard County Bar-Built Estuaries.
C. Down, and R. Withrow. Jun 78, 90p NASA-CR-158242, REPT-06-73

Descriptors: *Estuaries, Florida, *Vegetation, Aerial photography, Bioassay, Data acquisition, Ground truth, *Mapping, Sea grasses, Water quality.
Identifiers: Remote sensing.

For abstract, see STAR 1710

PB-293 307/5GA PC **A05**/MF **A01**
Virginia Inst. of Marine Science, Gloucester Point.
Factors Associated with Accuracy in Sampling Fish Eggs and Larvae,
R. R. Bowles, J. V. Merriner, and G. C. Grant. Oct 78, 94p SPECIAL SCIENTIFIC-89, FWS/OBS-78/83
Contract DI-14-16-0008-2118

Descriptors: *Larvae, *Eggs, *Fishes, *Samplers, Performance evaluation, Nets, Flowmeters, Accuracy, Pumps, Intake systems, Electric power plants, Mortality, Assessments, Aquatic animals, Abundance, Design, Efficiency, Towed bodies, Factor analysis.
Identifiers: Entrainment, Habitats.

The scope of this technical report covers four factors: (1) Gear currently used to sample ichthyoplankton; (2) sources of error associated with collection of ichthyoplankton samples used to assess power plant entrainment mortality; (3) abiotic and biotic factors that may affect attainment of 'representative' samples; and (4) factors that should be considered in the design or evaluation of ichthyoplankton sampling gear.

PB-293 342/2GA Not Available NTIS
Alaska Univ., Fairbanks. Inst. of Marine Science.
Assimilation of Silicic Acid by Phytoplankton in the Baja California and Northwest Africa Upwelling System.
David M. Nelson, and John J. Goering. c1978, 11p NSF/IDOE-79/15
Grant NSF-GA-37963
Pub. in Limnology and Oceanography, v23 n3 p508-517, 1978.

Descriptors: *Upwelling, *Phytoplankton, *Inorganic silicates, Monitoring, Nutrients, Assimilation, Concentration(Composition), Silicon isotopes, Isotopic labeling, Carbon, Nitrogen, Underwater light, Primary biological productivity, North Atlantic Ocean, North Pacific Ocean, Coasts, North Africa, Mexico, Tables(Data).
Identifiers: Reprints, International Decade of Ocean Exploration, Baja California, Thomas G Thompson Vessel, *Bioaccumulation.

Rates of silicic acid uptake by natural phytoplankton populations were measured at 31 stations in the region of coastal upwelling off Baja California, and 26 in the upwelling region off northwest Africa, using the stable isotope 30Si. Silicic acid uptake in both systems extended to about twice the depth to which carbon and nitrogen assimilation was observed, and continued at substantial rates throughout the 24-h day. Kinetic experiments, performed at the two Baja California stations and four northwest Africa stations exhibiting the lowest near-surface silicic acid concentrations observed, did not show the rate of uptake to be substrate limited. Data on upwelling velocities, nutrient concentrations, and nutrient uptake rates suggest that silicon limitation in the Baja California system was prevented by high rates of silicic acid regeneration resulting from dissolution of diatom silica. (Copyright (c) 1978, by the American Society of Limnology and Oceanography, Inc.)

PB-293 343/0GA Not available NTIS
Bigelow Lab. for Ocean Sciences, West Boothbay Harbor, ME.
'Mesodinium rubrum' in the Baja California Upwelling System,
T. T. Packard, D. Blasco, and R. T. Barber. c1978, 18p CONTRIB-75018, NSF/IDOE-79/18
Grants NSF-DES75-19025, NSF-GX-33502
Pub. in Upwelling Ecosystems, p73-89, 1978.

Descriptors: *Phytoplankton, *Upwelling, *Coasts, Abundance, Distribution(Property), Carbon, Nitrogen, Chlorophylls, Biomass, Tolerances(Physiology), Salinity, Ocean temperature, Mexico, North Pacific Ocean.
Identifiers: *Mesodinium rubrum, International Decade of Ocean Exploration, Baja California.

This paper describes observations of phytoplankton - numerical abundance and vertical distribution as well as carbon and nitrogen assimilation rates - in seawater inhabited by Mesodinium rubrum along the open coast of western Baja California.

PB-293 390/1GA
Seattle Pacific Univ., WA. Dept. of Biology.
Seagrasses and the Coastal Marine Environment,
Ronald C. Phillips. c1978, 11p NSF/IDOE-79/22
Grants NSF-OCE76-01307, NSF-OCE76-84259
Pub. in Oceanus, v21, n3, p30-40 1978.

Descriptors: *Sea grasses, *Plant ecology, *Coasts, Aquatic plants, Tolerances(Physiology), Salinity, Ocean temperature, Water pollution, Food chains, Primary biological productivity, Soil stabilization, Spoil, Dredging.
Identifiers: Reprints, International Decade of Ocean Exploration, Ecosystems.

By their presence on a landscape of relatively uniform relief, seagrasses create a diversity of habitats and substrates, providing a structured habitat from a structureless one. Because of their structure and physiology, seagrasses perform a wide assortment of biological and physical functions in the coastal environment. Seagrasses tolerate a wide range of salinities and they even will tolerate fresh water for short periods. Seagrasses also tolerate a wide range of water temperatures. The most important role of seagrasses in the food chain is the death and decomposition of the living plants to form detritus. There is an important relationship between seagrass detritus formation and nutrient cycling within and across ecosystem boundaries. Research indicates that seagrass leaves in a meadow act as a baffle that increases the rate of particulate sedimentation, preferentially concentrating the finer particles and stabilizing the underlying sedimentary deposits. Despite the ability of seagrasses to adapt to a fluctuating environment, several human-related activities threaten these hearty plants.

PB-293 466/9GA PC **A19**/MF **A01**
Delaware Univ., Newark. Coll. of Marine Studies.
Partially Annotated Tidal Marsh Bibliography. Second Edition. Selected Key Work Index,
Franklin C. Daiber, and Ellen C. Ganzman. 1978, 432p* DEL-SG-14-78, NOAA-79022702

Descriptors: *Marshes, *Bibliographies, Swamps, Aeration, Algae, Birds, Mammals, Invertebrates, Water pollution, Insects, Metals, Herbicides, Ecology, Aquatic plants, Primary biological productivity, Flooding, Aquatic animals, Drainage.
Identifiers: Sea Grant program, *Salt marshes.

An annotated bibliography encompassing all aspects of the tidal marshes is presented. Key words have been identified for general groupings of topics. Interest areas can be searched by scanning the various key words followed by author selection and title perusal. Many articles are cross-referenced.

PB-293 517/9GA PC **A02**
Maine Univ., Walpole. Ira C. Darling Center for Research, Teaching and Service.
Gregarious Setting in European and American Oysters - Response to Surface Chemistry vs Waterborne Pheromones,
Herbert Hidu, William G. Valleau, and Fletcher P. Veitch. Jun 78, 8p MSF/TR-31, DARLING-CONTRIB-119, NOAA-79022203
Pub. in Proceedings of the National Shellfisheries Association, v68 p11-16, Jun 78.

Descriptors: *Oysters, *Growth, Larvae, Exposure, Responses, Hormones.
Identifiers: Sea Grant program, *Pheromones, Crassostrea virginica, Ostrea edulis, Setting rates, Reprints.

Action of a waterborne pheromone in gregarious setting was demonstrated by exposing European oyster larvae to extrapallial fluid (EPF) prior to and during exposure to Cultch shell. Both treatments resulted in significant increase in larval setting over controls, indicating that the setting response can be released without contact with a treated cultch surface. Cross reactivity of EPF between American and European oysters was also indicated. Additional experiments should investigate the role of the pheromone in planktonic movements of larvae.

PB-293 735/7GA PC **A03**/MF **A01**
Delaware Univ., Newark. Coll. of Marine Studies.
Domestication of Halophytes as Potential Crops for Food, Feed, or Marsh Improvement: Summary of Progress-1974-1977,
G. Fred Somers, Donna M. Grant, and Ronal W. Smith. Dec 78, 40p DEL-SG-12-78, NOAA-79013104

Descriptors: *Aquatic plants, *Marshes, Growth, Salinity, Tolerances(Physiology), Feeding stuffs, Nutrients, Selection, Quality.
Identifiers: Sea Grant program, *Halophytes.

Investigations were undertaken in an effort to find salt-tolerant plants with potential as food crops for man or feed for domesticated animals, and to select superior plant lines for use in improving marshes. Of the species tested so far, the ones which appear most promising for further investigation, considering other characteristics in addition to salt tolerance, are indicated. Atriplex patula is a highly variable taxon and has responded well to tests both in the laboratory and in the field. Chenopodium album seedlings grew well. The plant is commonly used as a potherb and as a forage for sheep compares favorably with oats in palatability and with high-quality alfalfa in nutrient composition and digestibility. Panicum dichotomiflorum is an annual which grows abundantly in water of at least 20 parts by thousand by weight salinity. Spartina alterniflora is the major grass of the tidemarshes of

eastern United States. Spartina patens has been used as a forage for a long time.

PB-293 925/4GA PC **A04**/MF **A01**
University of Southern Mississippi, Hattiesburg.
The Marine Fauna of Mississippi: Crustaceans of the Order Cumacea.
Master's thesis Jan 66-Jun 70,
Robert Danny Weaver. Aug 74, 54p NOAA-79020501

Descriptors: *Crustacea, *Mississippi Sound, Sampling, Classifications, Morphology, Abundance, Ecology, Theses, Mississippi.
Identifiers: Cyclaspis varians, Cyclaspis pustulata, Mancocuma altera.

The study was undertaken to determine the quantity and diversity of Cumacea crustacea present in Mississippi waters. It revealed that some species were extremely abundant, as many as 200 per ten minute plankton tow. Most of the Cumacea found were taken from the shallow grassbed areas on the north side of Horn Island. An extensive collection in 1968 and a summer collection in 1973 were examined. Out of 485 total organisms studied, four species were identified. These were: Cyclaspis varians, Oxyurostylis smithi, Mancocuma altera, and Cyclaspis pustulata.

PB-294 618/4GA PC **A04**/MF **A01**
Woods Hole Oceanographic Institution, MA.
Salt Marsh Nitrogen Analysis: Fertilization and the Allocation of Biological Productivity,
Thomas M. Leschine. Feb 79, 51p WHOI-79-29, NOAA-79031604
Grant NOAA-04-8-M01-149

Descriptors: *Biological productivity, *Nitrogen, *Fertilization, *Great Sippewissett Marsh, Aquatic plants, Growth, Models, Flow charts, Shellfish, Nitrogen cycle, Biomass, Massachusetts.
Identifiers: Salt marshes, Sea Grant program.

A five compartment schematic model of the flow of nitrogen through Great Sippewissett Marsh is presented. Flows are described in terms of annual inputs, outputs and intercompartmental transfers of nitrogen. The nitrogen in all forms occurring in the marsh is considered, though dissolved organic nitrogen is disaggregated from the total flow. A computer aided input-output analysis is performed on the model to assess the degree to which nitrogen inputs to the marsh surface are linked to nitrogen outputs in the form of net growth in marsh shellfish. In this way the effects of both direct and indirect flows linking the two compartment involved are considered. The analysis is done to assess the likelihood that a large scale application of fertilizer to the marsh surface will significantly enhance shellfish growth in marsh tidal creeks.

8B. Cartography

E79-10163 PC **A09**/MF **A01**
Purdue Univ., Lafayette, IN. Lab. for Applications of Remote Sensing.
Processing Techniques Development, Volume III.
Final rept. 1 Dec 77-30 Nov 78,
D. A. Landgrebe, P. E. Anuta, M. M. Hixson, and P. H. Swain. Nov 78, 177p LARS-CR-112778-VOL-3, NASA-CR-160094
Contract NAS9-15466
Original contains imagery. Original photography may be purchased from the EROS Data Center, Sioux Falls, DC. 57198.

Descriptors: Data processing, Crop inventories, Image resolution, Sampling, Large Area Crop Inventory Experiment, Skylab program, EREP, Distortion, Polynomials, Photointerpretation, Classifications, Synthetic aperture radar.
Identifiers: *Image processing.

The author has identified the following significant results. Analysis of the geometric characteristics of the aircraft synthetic aperture radar (SAR) relative to LANDSAT indicated that relatively low order polynomials would model the distortions to subpixel accuracy to bring SAR into registration for good quality imagery. Also the area analyzed was small, about 10 miles square, so this is an additional constraint. For the Air Force/ERIM data, none of the tested methods could achieve subpixel accuracy. Reasons for this is unknown; however, the noisy (high scintillation) nature of the data and attendent unrecognizability of features contribute to this error. It is concluded that the quadratic model would adequately provide distortion modeling for small areas, i.e., 10 to 20 miles square.

PB-293 965/0GA PC **A02**/MF **A01**
Chamber of Foreign Trade of the German Democratic Republic, Berlin.
The German Democratic Republic's Economic/Technological Congress in the U.S.A. (1st). Lecture 5. Orthophoto-Technology Instruments from Jenoptik,
Horst Schoeler. 1978, 12p
See also Lecture 4, PB-293 964, and Lecture 6, PB-293 966. Prepared by Jenoptik, Jena (German D.R.). Presented at 'Days of Engineering of the GDR'.
Also available in set of 16 reports PC E19, PB-293 960-SET.

Descriptors: *Mapping, *Instruments, East Germany, Automatic mapping, Photogrammetry, Photographic equipment, Photographic techniques, Industrial engineering, Economic geography, Technology innovation, Maps, Technology, Technology assessment.
Identifiers: *Orthophotomaps.

The report is one from a series of lectures presented in the United States during 1978. Each paper discusses, briefly, a particular topic detailing either industrial development or economic growth in the German Democratic Republic.

8C. Dynamic Oceanography

AD-A065 022/6GA PC **A02**/MF **A01**
Woods Hole Oceanographic Institution, MA.
Some Evidence for Boundary Mixing in the Deep Ocean.
Technical rept.,
Laurence Armi. 11 May 77, 14p Rept nos. WHOI-79-11, WHOI-CONTRIB-4060
Contract N00014-76-C-0197, Grant NSF-OCE76-81190
Availability: Pub. in Jnl. of Geophysical Research, v83 nc4 p1971-1979, 20 Apr 78.

Descriptors: *Oceanographic data, Deep oceans, Ocean currents, Thermoclines, Mixing, Salinity, Ocean models, Reprints.
Identifiers: *Ocean boundary mixing.

No abstract available.

AD-A065 079/6GA PC **A02**/MF **A01**
Woods Hole Oceanographic Institution, MA.
Observations of Energetic Low Frequency Current Fluctuations in the Charlie-Gibbs Fracture Zone.
Technical rept.,
William J. Schmitz, Jr., and Nelson G. Hogg. 16 May 78, 15p Rept nos. WHOI-79-21, WHOI-CONTRIB-4141
Contract N00014-76-C-0197
Availability: Pub. in Jnl. of Marine Research, v36 n4 p725-734 1978.

Descriptors: *Ocean currents, Variations, Kinetic energy, Horizontal orientation, Ocean ridges, North Atlantic Ocean, Submarine troughs, Fracture(Mechanics), Circulation, Deep water, Flowmeters, Low frequency, Thermoclines, Reprints.
Identifiers: Charlie-Gibbs Fracture Zone.

No abstract available.

AD-A065 090/3GA PC **A04**/MF **A01**
Army Engineer Waterways Experiment Station, Vicksburg, MS.
A Numerical Model for Tsunami Inundation.
Final rept. Nov 77-Oct 78,
James R. Houston, and H. Lee Butler. Feb 79, 60p Rept no. WES-TR-HL-79-2

Descriptors: Mathematical models, Coastal regions, Hawaii, North Pacific Ocean, Grids(Coordinates), Predictions, Hydrodynamics, Equations of motion.
Identifiers: *Tsunamis, Crescent City(California), *Flooding, Model studies, Alaska, Simulation.

A two-dimensional and time-dependent numerical model was developed that calculates the land inundation of a tsunami. The model solves long wave equations that include bottom friction terms. A coordinate transformation was used to allow the model to employ a smoothly varying grid that allows cells to be small in the inundation region and large in the ocean. The model was verified by simulating the 1964 Alaskan tsunami at Crescent City, California. An application of the model to calculate inundation in a region of Hawaii is presented. (Author)

AD-A065 100/0GA PC **A08**/MF **A01**
Woods Hole Oceanographic Institution, MA.
Free-Drifting Buoy Trajectories in the Gulf Stream System (1975-1978). A Data Report.
Technical rept.,
P. L. Richardson, J. J. Wheat, and D. Bennett. Jan 79, 170p Rept no. WHOI-79-4
Contract N00014-74-C-0262, Grant NSF-OCE75-08765
Sponsored in part by Grant, NSF-OCE77-08045.

Descriptors: *Gulf Stream, *Buoys, *Trajectories, Ocean currents, Satellite tracking systems, Oceanographic data, Air water interactions, Ocean bottom topography, Seamounts, Drift.
Identifiers: Cyclonic rings, Ocean temperature, North Atlantic Ocean.

From 1975 to 1978, thirty-one satellite-tracked free-drifting surface buoys were launched in the Gulf Stream system. Most of these buoys were launched in cyclonic rings, as part of an interdisciplinary Gulf Stream ring experiment. Other buoys were launched in anticyclonic rings and the Gulf Stream itself; one buoy was launched in a cyclonic Kuroshio ring. The basic data set consists of buoy trajectories and sea surface temperature and velocity measurements along trajectories. The main results consist of a series of 19 buoy trajectories in rings from which the movement of rings is inferred and a series of 20 buoy trajectories in the Gulf Stream. Rings frequently coalesced with the Gulf Stream; and some reformed as modified rings. The trajectories of buoys in the Stream reveal that at times surface currents are strongly influence by topographic features such as seamounts and ridges. Most buoys in the Stream continued to move eastward until they reached the vicinity of the Grand Banks (50 deg W) where they rapidly fanned out, some moving northward, others eastward across the mid-Atlantic Ridge, still others southward and westward. (Author)

AD-A065 206/5GA PC **A02**/MF **A01**
Woods Hole Oceanographic Institution, MA.
A Census of Gulf Stream Rings, Spring 1975.
Technical rept.,
P. L. Richardson, R. E. Cheney, and L. V. Worthington. 29 Mar 78, 11p Rept nos. WHOI-79-23, WHOI-CONTRIB-4126
Contract N00014-74-C-0262, Grant NSF-OCE75-08765
Availability: Pub. in Jnl. of Geophysical Research, v83 nC12 p6136-6144, 20 Dec 78.

Descriptors: *Gulf Stream, Ocean currents, Meteorological satellites, North Atlantic Ocean, Bathymetry, Reprints.

No abstract available.

AD-A065 297/4GA PC **A04**/MF **A01**
Pacific Missile Test Center, Point Mugu, CA.
Tidal and Lunar Data for Point Mugu, San Nicolas Island, and the Barking Sands Area During 1979.
Technical publication,
Robert de Violini. 5 Feb 79, 64p Rept no. PMTC-TP-7912

Descriptors: Tides, Moon, Tables(Data).
Identifiers: Point Mugu, Moonrise, Moonset, *Ocean tides, San Nicolas Island, Ephemerides, California.

Basic lunar and tidal data for Point Mugu, San Nicolas Island, and the Barking Sands area during 1979 are provided. The data presented are (1) tidal

data, (2) times of moonrise and moonset, and (3) times of lunar phases. (Author)

PB-293 084-T/GA PC **A08**/MF **A01**
National Science Foundation, Washington, DC. Office for the International Decade of Ocean Exploration.
The Stratosphere of the Atlantic Ocean,
Georg Wuest. c1978, 166p TT-78-52018
Trans. of Scientific Results of the German Atlantic Expedition of the Research Vessel 'Meteor' 1925-27, Berlin/Leipzig, v11 sect 1, 1935. Sponsored in part by National Science Foundation, Washington, DC. Special Foreign Currency Science Information Program.Color illustrations reproduced in black and white.

Descriptors: *Water masses, *Oceanographic data, *Oceanographic surveys, Ocean temperature, Salinity, Oxygen, Dissolved gases, Deep water, Density(Mass/volume), Abyssal zone, North Atlantic Ocean, Antarctic regions, Translations, East Germany.
Identifiers: *Ocean circulation.

Contents: Spreading and mixing of the stratospheric water masses within core layers--(The Subantarctic intermediate water, the upper North Atlantic deep water, the middle and lower North Atlantic deep water, the Antarctic bottom water); Variations of oceanographic parameters in the stratosphere; Origin and spreading of the stratospheric water types on the basis of three longitudinal sections of salinity, temperature, oxygen and density; The vertical distribution of temperature, salinity and density on the basis of the 'meteor' cross-sections; The horizontal distribution of temperature, salinity and density at standard depths.

PB-293 231/7GA PC **A03**/MF **A01**
National Science Foundation, Washington, DC. Office for the International Decade of Ocean Exploration.
The POLYMODE Local Dynamics Experiment: Objectives, Location and Plan,
James C. McWilliams, and Robert H. Heinmiller. Apr 78, 33p NSF/IDOE-79/3
Prepared in cooperation with Office of Naval Research, Arlington, VA.

Descriptors: *Ocean currents, *Eddies, *Oceanographic data, Research projects, Measurement, Bathythermograph data, Floats, Moorings, SOFAR, North Atlantic Ocean.
Identifiers: *Ocean circulation, International Decade of Ocean Exploration, POLYMODE project, Oceanographic equipment.

The POLYMODE Local Dynamics Experiment (LDE) will occur during 1978-79 in the Western North Atlantic Ocean. The purposes of this document are to describe the objectives of the experiment, list the participating scientists and their plans both for field measurements and subsequent data analysis, and discuss the relationship between the LDE and other POLYMODE programs. The POLYMODE program focuses primarily upon the variety of mesoscale eddy processes which occur in the ocean (i.e., the energetic motions with horizontal spatial scales of tens and hundreds of kilometers and time scales of weeks and months) and their relationship to the mean circulation. The LDE has been designed to extend the MODE results and to provide more accurate tests of dynamical hypotheses and to make a first exploration of the interaction of mesoscale eddies and the mean circulation.

PB-293 296/0GA PC **A04**/MF **A01**
Oregon State Univ., Corvallis. School of Oceanography.
A Compendium of Time Series Measurements from Moored Instrumentation during the MAM '77 Phase of JOINT-II.
Technical rept.,
K. H. Brink, R. L. Smith, and David Halpern. Oct 78, 75p OSU-REF-78-17, NSF/IDOE/CUEA/TR-45, NSF/IDOE-79/25
Grants NSF-OCE78-03380, NSF-OCE78-03382
Prepared in cooperation with National Oceanic and Atmospheric Administration, Seattle, WA. Pacific Marine Environmental Lab. Sponsored in part by Grant NSF-OCE78-04823.

Descriptors: *Ocean currents, *Oceanographic data, *Upwelling, Coasts, Time series analysis, Statistical data, Diagrams, Wind velocity, Temperature, Sites, Depth, Sea level, Profiles, Peru, South Pacific Ocean.
Identifiers: International Decade of Ocean Exploration, CUEA program.

An extensive array of instruments, including current meters, temperature recorders, anemometers, and tide gauges, was moored off the Peru coast during the culminating phase of JOINT-II from early March to late May 1977. The time series data used in this compendium are low pass filtered versions of the original data series. The low pass filter removed the diurnal tide and higher frequency fluctuations. Visual and statistical representations of the data are presented in forms that will be generally useful to the interdisciplinary research of CUEA. Stick diagrams are plotted on a common scale, and show the entire record length from each instrument. Temperatures are shown at the top of each diagram. Line plots of alongshore wind velocity, adjusted sea level and current velocity components are shown. Line plots, arranged for easy intercomparison, are presented for wind velocity components and for adjusted sea level. Vertical profiles of the onshore-offshore and alongshore current components are presented and are for two day intervals.

PB-293 310/9GA Not available NTIS
Massachusetts Inst. of Tech., Cambridge. Dept. of Earth and Planetary Sciences.
The North Atlantic General Circulation West of 50 deg W Determined by Inverse Methods.
Reprint article,
Carl Wunsch. cNov 78, 39p MODE-CONTRIB-100, NSF/IDOE-79/4
Grant NSF-OCE75-003998
Pub. in Reviews of Geophysics and Space Physics, v16 n4 p583-620 Nov 78.

Descriptors: *Ocean currents, Mathematical models, Flow distribution, Hydrodynamics, Eddies, Seasonal variations, Matrices(Mathematics), Graphs(Charts), North Atlantic Ocean.
Identifiers: International Decade of Ocean Exploration, *Ocean circulation, Tracer studies, Reprints.

Linear inverse theory in the context of its application to determining the general circulation of the ocean is reviewed. Inverse methods are intimately related to least squares and rank deficient regression problems. Results are dependent upon the model assumed; in this paper all models are linear, geostrophic, and mass conserving, and they differ only in the initial reference pressure for the dynamic computations. It is shown how to compute the resolution of both the observations and the solution, the degree of data independence, and the solution variance. To handle the underdetermined nature of the problem a conventional requirement of maximum simplicity relative to the initial model is imposed. More generally, the methodology provides a powerful technique for handling imperfect and noisy chemical and dynamical tracers and for assimilating a great variety of different information into dynamically consistent circulation schemes. The methods are applied to the western North Atlantic west of the 50 degrees W meridian.

PB-293 321/6GA Not available NTIS
Oregon State Univ., Corvallis.
Seasonal Differences in Low-Frequency Current Fluctuations Over the Oregon Continental Shelf,
Adriana Huyer, Robert L. Smith, and Edwin J. C. Sobey. c1978, 14p NSF/IDOE-79/14
Grants NSF-DES74-22290, NSF-OCE77-07932
Prepared in cooperation with Science Applications, Inc. Boulder, CO. Sponsored in part by Grant NSF-OCE76-00132.
Pub. in Jnl. of Geophysical Research, v83 nC10 p5077-5089, 20 Oct 78.

Descriptors: *Upwelling, *Ocean currents, *Continental shelves, Monitoring, Seasonal variations, Time series analysis, Amplitude, Wind shear, Depth, Sea level, Pressure, Correlation techniques, Velocity measurement, Density(Mass/volume), Flowmeters, Oregon, North Pacific Ocean.
Identifiers: International Decade of Ocean Exploration, Baroclinity, Barotropic flow, CUEA program, Reprints.

Current observations over three isobaths (50, 100, and 200 m) on the Oregon continental shelf are available for winter and spring 1975 and summer 1973. In each season there are low-frequency current fluctuations with periods of several days, predominantly alongshore, that are correlated with the along-shore wind stress and sea level at Newport. The amplitude of the current fluctuations is greatest in winter and least in summer, but the ratio between current and wind stress fluctuations does not change appreciably. In each season the alongshore fluctuations have the same sign throughout the water column, and they are nearly in phase across the shelf. The vertical and offshore structure of the fluctuations was examined by means of empirical orthogonal functions. In winter the amplitude decreases with depth at each location; in summer it is nearly constant at all locations. The near-bottom shear is consistent with Ekman veering. Away from the bottom the shear is in approximate geostrophic balance. The fluctuations have a significant baroclinic component in winter but not in summer. In each season the amplitude of the fluctuations decreases with distance from shore, but the offshore length scale is about twice as great in winter as it is in spring. (Copyright (c) 1978 by the American Geophysical Union.)

PB-293 337/2GA Not available NTIS
Florida State Univ., Tallahassee. Dept. of Oceanography.
A Diagnostic Model of Continental Shelf Circulation,
Y. Hsyeh, and Chich Yuan Peng. c1978, 10p NSF/IDOE-79/13
Contract N00014-75-C-0201, Grant NSF-OCE76-00595
Sponsored in part by Grant NOAA-04-6-022-44026.
Pub. in Jnl. of Geophysical Research, v83 nC6 p303-3041, 20 Jun 78.

Descriptors: *Upwelling, *Ocean currents, *Continental shelves, Mathematical models, Hydrodynamics, Friction, Momentum, Geostropic wind, Stresses, Density(Mass/volume), Depth, Turbulent flow, Pressure, Correlation techniques, Measurement, Flowmeters, Oregon, North Pacific Ocean.
Identifiers: International Decade of Ocean Exploration, *Ocean circulation, Barotropic flow, CUEA program, Reprints.

Numerical integration of a steady state vorticity equation for barotropic currents (defined as the deepwater currents) provides estimates of the residual circulation over a continental shelf region that are consistent with a given dynamic height field. The threshold in time scale for motions for which these estimates apply is given by the inverse of the product of the Coriolis parameter and the ratio of the thickness of a topographic boundary layer to the longshore scale and is typically 20 days. In this steady limit, within a distance (approx. 50 km) from the coast, a flow of frictional equilibrium prevails in which turbulent vertical transfer of momentum enters as surface and bottom stresses. The stress at the shelf bottom proves to be easily expressible as proportional to the barotropic current velocity. An application to the Coastal Upwelling Experiment I data off Oregon demonstrates the skill of the computation in that it accounts for over 75% of the observed longshore difference in both the longshore and onshore-offshore velocity components at the 60-m depth between two pairs of current meter moorings along the 100-m isobath. (Copyright (c) 1978 by the American Geophysical Union.)

PB-293 385/1GA Not available NTIS
Oregon State Univ., Corvallis. School of Oceanography.
A Study of Low-Frequency Fluctuations Near the Peru Coast.
Kenneth H. Brink, J. S. Allen, and Robert L. Smith. cNov 78, 19p NSF/IDOE-79/10
Grants NSF-OCE76-00596, NSF-OCE78-03380
Pub. in Journal of Physical Oceanography, v8, n6, p1025-1041, Nov 78.

Descriptors: *Upwelling, *Ocean currents, *Coasts, *Continental shelves, Monitoring, Flow distribution, Wind pressure, Stresses, Friction, Turbulence, Density(Mass/volume), Pressure, Momentum, Ocean temperature, Peru, South Pacific Ocean.
Identifiers: Reprints, International Decade of Ocean Exploration, CUEA program, Ocean circulation, Baroclinity.

An analysis is presented of low-frequency fluctuations in currents, temperature and tide gage data collected during the March-September 1976 segment of the CUEA JOINT-II experiment off the coast of Peru. The observations were made near 15 degrees S, a region of particularly strong and persistent coastal upwelling. Conclusions about the dynamics of motions over the continental shelf and slope are reached by means of correlations, empirical orthogonal functions and other indicators. It is found that flow over the shelf, where stratification was weak, was generally dominated by vertical turbulent frictional effects and was strongly coupled to the effectively inviscid, baroclinic flow over the slope. The momentum balance was three dimensional, with the alongshore pressure gradient playing an important role. In contrast to behavior in other coastal upwelling regions, the alongshore velocity field over the shelf and slope was evidently not strongly driven by the local alongshore component of the wind stress. The mean wind stress throughout the period was equatorward (upwelling favorable), whereas the mean alongshore currents over the shelf were poleward. The alongshore current fluctuations, which propagated poleward along the coast, were initially poorly correlated with the local wind stress, but during the course of the experiment, the wind stress increased in magnitude and gained in importance as a driving mechanism. (Copyright (c) 1978, American Meteorological Society.)

PB-293 738/1GA Not available NTIS
Lamont-Doherty Geological Observatory, Palisades, NY.
The Basin Waters of the Bransfield Strait,
Arnold L. Gordon, and Worth D. Nowlin, Jr. cMar 78, 11p LDGO-2665, NSF/IDOE-79/6
See also PB-283 356. Prepared in cooperation with Texas A and M Univ., College Station. Dept. of Oceanography.
Pub. in Jnl. of Physical Oceanography, v8, n2, p258-264, Mar 78.

Descriptors: *Circulation, *Bransfield Strait, *Oceanographic data, Water masses, Deep water, Salinity, Oxygen, Dissolved gases, Inorganic silicates, Ocean bottom, Tritium, Profiles, Ocean temperature, Weddell Sea, Scotia Sea, Antarctic Regions.
Identifiers: Reprints, International Decade of Ocean Exploration, *Ocean circulation, FDRAKE project, Conrad vessel, Melville vessel.

Hydrographic data were obtained within the Bransfield Strait and adjacent waters during February and March 1975 by R/V Conrad and R/V Melville as part of FDRAKE 75. Within the Strait the Circumpolar Deep Water is either missing or its influence is weak. The salinity maximum, oxygen minimum and silicate maximum present in the upper layers of the Strait attenuate toward the east, demonstrating the eastward decrease of Bellingshausen Sea influence. The Strait contains three basins separated from one another by sills less than 1500 m deep and from adjacent ocean areas by depths near or less than 500 m; except for a channel to the northeast of slightly over 1100 m depth. The deep and bottom waters of these basins, with depths to nearly 2600 m, are significantly colder, less saline, higher in oxygen and lower in nutrient concentrations than the deep exterior water adjacent to the Strait. These characteristics confirm Clowes' (1934) contention that the waters of these basins are renewed by local convection. Bottom (2566 m) tritium values are essentially the same as surface values, which are greater than expected for subsurface water which has not recently been in contact with the surface waters.

PB-294 232/4GA PC **A04**/MF **A01**
National Oceanic and Atmospheric Administration, Miami, FL. Atlantic Oceanographic and Meteorological Labs.
Ocean Thermal and Current Structures in the Tropical South Atlantic Relative to the Placement of a Grazing OTEC Plant.
Technical memo.,
Robert L. Molinari, and Frank Chew. Jan 79, 68p NOAA-TM-ERL-AOML-35, NOAA-79031402

Descriptors: *Ocean currents, *Ocean temperature, *Thermoclines, *Oceanographic data, Energy conversion heat sources, Temperature gradients, Graphs(Charts), South Atlantic Ocean.
Identifiers: *Ocean thermal energy conversion.

The results of the first stage of a multi-stage effort designed to provide ocean thermal and velocity data in the tropical South Atlantic for OTEC is presented. The tropical South Atlantic is one of several areas under consideration for placement of a grazing OTEC plant. In contrast to the moored OTEC plant, a grazing plant can take an active role in acquiring the thermal resource needed to drive the power plant. Because of the ability for self-propulsion, the data requirements for a grazing plant are somewhat different than those for a moored plant. In particular, data are required over a larger spatial area than those in the moored case with knowledge of the details of the horizontal distributions of temperature and velocity as important as data on the vertical distribution. These data requirements are reviewed, with particular reference given both to the importance of advection versus local heating effects in determining the thermal resource in the tropics, and how the relative importance of these effects impacts upon the OTEC operation.

8E. Geodesy

AD-A064 995/4GA PC **A02**/MF **A01**
Naval Surface Weapons Center, Dahlgren Lab., VA.
Maximal Geoidal Elevations due to Simulated Seamounts.
Final rept.,
Bernd Zondek. Nov 78, 22p Rept no. NSWC/DL-TR-3915

Descriptors: *Geoids, *Seamounts, Elevation, Mathematical models, Ocean surface, Ocean bottom topography, Depth, Slope, Earth crust, Gravity, Formulas(Mathematics).

Satellite altimetry yields data about the topography of the sea surface. Seamounts beneath the surface affect its shape. In this report a seamount model, suggested by T. M. Davis (NAVOCEANO), is used to calculate the maximal geoidal elevation as a function of ocean depth, peak depth, and slope.

8F. Geography

E79-10182 PC **A04**/MF **A01**
Lockheed Electronics Co., Inc., Houston, TX. Systems and Services Div.
Nationwide Forestry Applications Program: Ten-Ecosystem Study (TES) Site VII, Weld County, Colorado.
Final rept.,
J. E. Weaver, and R. H. Almond. Jan 79, 52p LEC-12921, NASA-CR-160126, JSC-14671
Contract NAS9-15800
Original contains color imagery. Original photography may be purchased from the EROS Data Center, Sioux Falls, SD 57198. Sponsored in part by Forest Service, Washington, DC.

Descriptors: *Ecosystems, Colorado, *Grasslands, Inventories, Soils, Topography, Vegetation, EREP, Skylab program, Data processing, Accuracy, Spectral signatures, Image resolution.

The author has identified the following significant results. The best dates for automatic data processing analysis appeared to be in midsummer. The level 2 separation of grassland, water, and other was reasonably successful, but the level 3 separation of grassland into cultivated (growing crops) and weeds did not appear feasible. Low simulated inventory proportions of grassland indicated that the restricted inventory signature was not representative of all grassland classes and could not be extended with acceptable accuracy.

PB-293 161/6GA PC **A03**/MF **A01**
Canada Centre for Remote Sensing, Ottawa (Ontario).
CCRS Airborne Program Assessment: Volume 1 - Analysis.
Research rept.,
Josef Cihlar. Apr 78, 43p RR-78-3
See also Volume 2, PB-293 162.

Descriptors: *Remote sensing, Agriculture, Ecology, Land use, Hydrology, Conservation, Forestry, Geology, Limnology, Pollution, Wildlife, Mapping, Engineering, Research projects, Reviewing, Canada.
Identifiers: Canada Centre for Remote Sensing.

A five-month survey of the users of airborne remote sensing data produced by the Airborne Operations of the Canada Centre for Remote Sensing was undertaken. The purpose of the survey was to determine how the airborne data were used, what benefits accrued from their use, and what applications have been developed to an operational level. Volume I contains an analysis of the findings. Particular attention has been given to categories of users, project characteristics, and to demonstrated applications. Rudimentary statistical analyses have been carried out to determine type of use, principal sensor, and benefit attributes of the airborne projects. Recommendations aimed at improving the effectiveness of the airborne data utilization have been made.

PB-293 162/4GA PC **A09**/MF **A01**
Canada Centre for Remote Sensing, Ottawa (Ontario).
CCRS Airborne Program Assessment: Volume 2 - User Reports.
Research rept.,
Josef Cihlar. Apr 78, 193p RR-78-3
See also Volume 1, PB-293 161.

Descriptors: *Remote sensing, Agriculture, Ecology, Land use, Hydrology, Conservation, Forestry, Geology, Limnology, Pollution, Wildlife, Mapping, Engineering, Research projects, Reviewing, Documents, Surveys, Canada.
Identifiers: Canada Centre for Remote Sensing.

This report contains results of a survey to determine how remote sensing data were used, what benefits accrued from their use, and what applications were developed to an operational level.

8G. Geology and Mineralogy

AD-A065 068/9GA PC **A02**/MF **A01**
Massachusetts Inst. of Tech., Cambridge. Dept. of Earth and Planetary Sciences.
A Technique for the Precise Measurement of Acoustic Velocity in, and between, Boreholes with a Sparker Source,
Jeremy Hall, Frank Miller, and Gene Simmons. 3 Oct 78, 5p
Contract N00014-76-C-0478

Descriptors: *Geoacoustics, Soil mechanics, *Acoustic velocity, Sound generators, Sparks, Boreholes, Transducers, Barium titanates.
Identifiers: Measurement.

No abstract available.

AD-A065 084/6GA PC **A02**/MF **A01**
Scripps Institution of Oceanography, San Diego, CA. Marine Physical Lab.
Are Spreading Centres Perpendicular to Their Transform Faults.
Summary rept.,
Tanya Atwater, and Ken C. MacDonald. 1 Aug 77, 11p Rept no. MPL-U-74/77
Contract N00014-75-C-0749
Prepared in cooperation with Massachusetts Inst. of Tech., Cambridge. Dept. of Earth and Planetary Science. Sponsored in part by Grant NSF-OCE76-22040.
Availability: Pub. in Nature, v270 n5639 p715-719, 22/29 Dec 77.

Descriptors: *Faults(Geology), *Oceanic crust, Ocean ridges, Tectonics, Earth models, Reprints.

No abstract available.

AD-A065 207/3GA PC **A03**/MF **A01**
Woods Hole Oceanographic Institution, MA.
Geotechnical Properties of Ocean Sediments Recovered with the Giant Piston Corer: Blake-Bahama Outer Ridge.
Technical rept.,
Armand J. Silva, and Charles D. Hollister. 8 Apr 77, 27p Rept nos. WHOI-79-25, WHOI-CONTRIB-3963
Contracts N00014-66-C-0241, N00014-72-A-0372
Availability: Pub. in Marine Geology, 29 p1-22 1979.

Descriptors: Ocean bottom sampling, *Sediments, Core sampling, South Atlantic Ocean, Reprints.
Identifiers: *Blake Bahama Outer Ridge.

No abstract available.

E79-10160 PC **A02**/MF **A01**
Jet Propulsion Lab., Pasadena, CA.
Geologic Application of Thermal Inertia Imaging Using HCMM Data.
Quarterly rept. Oct-Dec 78,
Helen N. Paley, and Anne B. Kahle. 23 Feb 79, 15p NASA-CR-158050, GSFC/HCM-028
Contract NAS7-100
Original contains imagery. Original photography may be purchased from the EROS Data Center, Sioux Falls, SD. 57198.

Descriptors: *Heat capacity mapping mission, Geology, Death Valley(CA), California, Nevada, Soil moisture, Earth Resources program, *Thermal mapping.

The author has identified the following significant results. The day infrared and visible HCMM satellite data for Death Valley taken on 31 May 1978 were compared with aircraft data of the same area taken in March of the same year. In the visible image, it is possible to note the drying of the valley floor during the two month period between acquisition of the two data sets. On the IR image however, the valley floor remains cool, probably indicating that, while the standing water has disappeared, the floor is still moist.

N79-19517/8GA PC **A02**/MF **A01**
Hawaii Univ., Honolulu.
Geochemical Data Synthesis and Analysis.
Final Technical Report, 1 Dec. 1977 - 31 Jan. 1979.
J. A. Philpotts. 1979, 6p NASA-CR-158231
Grant NSG-5203

Descriptors: *Geochemistry, Data acquisition, Data processing, Chemical analysis, *Gadolinium, Geological surveys, Sampling.
Identifiers: Rare earth elements, Europium.

For abstract, see STAR 1710

N79-19518/6GA PC **A04**/MF **A01**
Lamont-Doherty Geological Observatory, Palisades, NY.
The Effects of Confining Pressure and Stress Difference on Static Fatigue of Granite.
R. L. Kranz. 1979, 51p NASA-CR-158236, CONTRIB-0000
Contract NGR-33-008-146
Subm-Submitted for Publication.

Descriptors: *Fatigue tests, *Granite, Pressure effects, Stress concentration, Crack propagation, Creep tests, Fracture strength, Rigidity.

For abstract, see STAR 1710

PB-293 230/9GA PC **A03**/MF **A01**
Illinois State Geological Survey, Urbana.
Internal Surface Area, Moisture Content, and Porosity of Illinois Coals: Variations with Coal Rank,
Josephus Thomas, Jr., and Heinz H. Damberger. 1976, 44p CIRC-493

Descriptors: *Coal, Area, Porosity, Moisture content, Ranking, Differences, Variations, Measurement, Calorific value, Reflectance, Illinois.

In this report, the authors have discussed methods of measuring the surface area of coal, evaluated the internal surface area of Illinois coals on the basis of their studies, and shown the correlations of internal surface area with such coal rank parameters as calorific value, inherent moisture content, and vitrinite reflectance.

PB-293 541/9GA PC **A04**/MF **A01**
Systems, Science and Software, La Jolla, CA.
Rock Disentegration by Thermal Weakening and Water Jet Impact.
Semiannual rept. 15 Jun-14 Dec 73,
T. David Riney. 18 Dec 73, 75p SSS-R-73-2011, NSF/RA/E-73/555
Grant NSF-GI-39224

Descriptors: *Rocks, *Cutting, *Hydraulic jets, *Thermal degradation, Thermal stresses, Water impingement, Fragmentation, Rock mechanics.
Identifiers: Thermal cutting.

The objectives are: to identify the important mechanisms causing a rock to disintegrate under thermal and water jet loading; to calculate the time and spatial variations in these physical processes; to delineate experiments that may be undertaken to verify the theoretical models; and to determine favorable combinations of thermal and hydrodynamic loading conditions for rock fragmentation. Both continuous jet and high velocity pulse jet fragmentation methods are considered in the theoretical studies. The characterization of the mechanical loading imposed by a jet impinging on a rigid flat plate was completed. Both compressible and incompressible cases were considered. Calculations were also made to evaluate the effect of a non-flat surface on the load imposed by a low velocity jet. Stresses in a rock under steady non-penetrating jet surface loading have been computed for both a flat surface and a surface with a cavity. Initial calculations have also been made of the dynamic response of an impermeable rock undergoing pulse jet loading.

PB-294 473/4GA PC **A12**/MF **A01**
Woods Hole Oceanographic Institution, MA. Dept. of Geology and Geophysics.
Geology of the Passive Margin Off New England.
Doctoral thesis,
James A. Austin, Jr. Feb 79, 272p WHOI-79-27, NOAA-79031603
Grants NOAA-04-7-158-44104, NOAA-04-8-M01-149

Descriptors: *Continental drift, *Geologic processes, *Tectonics, History, Earth crust, Sediments, Graben(Geology), Continental slopes, Stratigraphy, Seismic reflection method, Thickness, Geologic structures, Ocean bottom, Continental rises, Geochronology, Georges Bank, Oceanic crust, North Atlantic Ocean, Theses.
Identifiers: New England, *Plate tectonics, Continental margin, Sea Grant program.

The results of a detailed geophysical investigation conducted by the Woods Hole Oceanographic Institution in 1975 have been used in conjunction with other available information to reconstruct the geologic history of the passive continental margin off New England. Rifting between northeastern North America and Morocco during the Middle-Late Triassic produced a complex series of horsts and grabens in Precambrian/Paleozoic crust. Intra-rift sediments consist of clastics, evaporites, and volcanics. Continental separation occurred and sea-floor spreading began 195-190 my B.P. The boundary between 'normal' continental crust and crust radically altered by fracturing and intrusion may be represented by a pronounced basement 'hingezone'. Prior to margin subsidence, extensive sub-aerial erosion carved a 'break-up uncomformity'-reflector 'K' which truncated pre-existing rift structures and which must be approximately the same age as the oldest oceanic crust. Within the overlying 'drift' sediments, six acoustic horizons have been regionally traced and correlated with strata samples by a well drilled on the western Scotian Shelf. The total sediment thickness of both rift and drift sequences beneath Georges Bank may be 13 km, of which more than 80% is Jurassic in age.

8H. Hydrology and Limnology

AD-A064 992/1GA PC **A04**/MF **A01**
Army Engineer Waterways Experiment Station, Vicksburg, MS.
A Numerical Hindcast Model for Wave Spectra on Water Bodies with Irregular Shoreline Geometry. Report 2. Model Verification with Observed Wave Data.
Rept. for Sep 74-Jun 78,
Donald T. Resio, and C. Linwood Vincent. Dec 78, 59p Rept no. WES-MP-H-77-9-2
See also AD-A044 051.

Descriptors: *Lake waves, *Great Lakes, Wave propagation, Spectrum analysis, Shores, Variations, Mathematical models, Water waves, Height, Frequency, Mathematical prediction, Wind, Numerical analysis, Statistical data, Lake Erie, Lake Superior.
Identifiers: Hindcasting, Lake Ontario.

The procedures used to verify a numerical model for wave generation in water bodies of arbitrary shape are described. The verification results for Lakes Erie, Ontario, and Superior are presented. Parameters included in the study include significant wave height and frequency at the spectral peak. Examples of hindcast and measured one-dimensional (frequency) spectra are given. The study indicates a capability of the model to hindcast significant wave height such as root-mean-square error of about 1.5 ft and to hindcast the period of peak frequency with a root-mean-square error of 1 sec. These errors include effects from both the wave model and the hindcast model used to estimate the windfield. (Author)

AD-A065 091/1GA PC **A05**/MF **A01**
Iowa Inst. of Hydraulic Research, Iowa City.
Assessment of Available Field Sedimentation Data for GREAT-II Watershed,
Tatsuaki Nakato, and John Vadnal. Nov 78, 83p Rept no. IIHR-216

Descriptors: *Sedimentation, *Streams, Field conditions, Mississippi River, *Sediment transport, Hydraulic models, Erosion, Water pollution, Data acquisition.
Identifiers: Suspended sediments, Stream flow, Sampling, Tributaries.

An inventory study concerning available stream sedimentation and flow data for the GREAT II (Great River Environmental Action Team II) watershed was conducted for the Sediment and Erosion Work Group of GREAT II. The study area covered the Upper Mississippi River and its tributaries between Guttenberg, IA, and Saverton, MO. These data were utilized to obtain rough estimates of annual sediment yields at individual sediment sampling stations by simple correlating monthly averaged suspended-sediment discharges with monthly averaged stream discharges. Based on these estimates, major sediment source areas were identified, and recommendations regarding installation of new sediment sampling stations for further baseline data were made. A review of some existing methodologies in estimating sediment yields also was made, and a plan of study to determine quantities of sediment delivered by tributary sources into the Mississippi River was proposed. (Author)

AD-A065 478/0GA PC **A09**/MF **A01**
Air Force Inst. of Tech., Wright-Patterson AFB, OH.
Hydrogeology of Utah Lake with Emphasis on Goshen Bay.
Doctoral thesis,
Jacob D. Dustin. Dec 78, 178p Rept no. AFIT-CI-79-102D
Original contains color plates: All DDC and NTIS reproductions will be in black and white.

Descriptors: *Lakes, Ground water, *Aquifers, Subsurface, Water flow, Valleys, Seepage, Shallow water, Fresh water, *Water quality, Sources, Mineralization, Area coverage, Limitations, Dikes, Arid land, Water conservation, Irrigation systems, Utah, Environmental management, Theses.
Identifiers: *Ground water recharge, Springs(Water), *Hydrogeology, Utah Lake, Goshen Bay.

This investigation provides a comprehensive picture of the hydrogeology of Utah Lake. The results indicate that available aquifer recharge has been traditionally underestimated; the depth of valley fill is probably twice that which had been previously supposed; artesian pressures force a considerable amount of ground-water upward through confining layers; and there is ample opportunity for water to pass from Cedar Valley into Goshen Valley. The author concludes that diffuse seepage accounts for the majority of subsurface inflow to the lake; the total annual subsurface inflow is in excess of 100,000 acre feet (123 million cu m); and groundwater does enter through the bottom of Goshen Bay. The ground-water flowing into Goshen Bay is of a relatively low quality and the maximum volume is estimated to be on the order of 18,000 acre feet (22.1 million cu m) per year. Much of this Goshen Bay water may come from Cedar Valley. (Author)

N79-19312/4GA PC **A02**/MF **A01**
Delft Hydraulics Lab. (Netherlands).
Model for Non-Steady Suspended Sediment Transport.
P. J. M. Kerssens, and L. C. Vanrijn. Nov 77, 10p PUBL-191
Conf-Presented at the 17TH Congr. Of the Intern. Assoc. For Hydraulic Res., Baden-Baden, 15-19 Aug. 1977.

Descriptors: *Sediment transport, *Solid suspensions, Mathematical models, Convection, Diffusion, Logarithms, Two dimensional flow, Unsteady state, Velocity distribution.
Identifiers: Netherlands.

For abstract, see STAR 1710

PB-293 157/4GA PC **A05**/MF **A01**
Coastal Environments, Inc., Baton Rouge, LA.
A Comparison of Three Flooding Regimes, Atchafalaya Basin, Louisiana.
Final rept.,
Johannes L. van Beek, Karen Wicker, and Benjamin Small. Dec 78, 93p EPA/600/3-78/106
Contract EPA-68-01-2299
Sponsored in part by Corvallis Environmental Research Lab., OR.

Descriptors: *Flooding, *Atchafalaya Basin, Flood control, Management, Sediment transport, Evaluation, Rainfall, Comparison, Boundaries, Drainage, Sediments, Stream flow, Dewatering, Vegetation, Louisiana.
Identifiers: Hydrologic data, *Water levels, Unit hydrographs.

Three backwater areas in the Atchafalaya Basin, Louisiana, are compared. The three areas studied are Fordoche and Buffalo Cove, within the Atchafalaya Basin Floodway and subject to annual flooding by the Atchafalaya River, and Pat Bay which is located outside the floodway and in which flooding is controlled by local rainfall. Hydrologic regimes are compared for relative contributions of river water and local drainage, amplitude of water level fluctuations, mode of water introduction and movement, and related introduction of sediments. From this comparison, the following were seen as the most urgent considerations for management of Atchafalaya Basin Floodway units: (1) Induction of low discharge throughflow in order to enhance water exchange in those areas presently subject to a backwater regime and insufficiently dewatered, (2) reduction of inflow associated with short-term water level fluctuations during annual rise of Atchafalaya River stages in order to reduce sediment introduction, (3) maximum utilization of the unit's precipitation surpluses as a source of floodwater to reduce inflow of Atchafalaya River water and sediments, (4) realization of (1), (2), and (3) through water introduction at the upper end of the unit and simultaneous control over outflow at the lower end of the unit.

PB-293 211/9GA PC **A10**/MF **A01**
Purdue Univ., Lafayette, IN. Water Resources Research Center.
Interactive Multiple Objective Optimization.
Technical rept.,
Kenneth J. Musselman, and Joseph J. Talavage. Feb 79, 209p PWRRC-TR-121, W79-05092, OWRT-B-083-IND(10)
Contract DI-14-31-0001-5213

Descriptors: *Reservoirs, *Runoff, *Drainage, *Urban areas, Mathematical models, Optimization, Rainfall, Floods, Water storage, Cost analysis, Sewage treatment, Water pollution, Nonlinear programming, Algorithms, Flow charting, Computer programs, Systems analysis.
Identifiers: *Storm water runoff, *Urban hydrology.

Decision problems often arise in which several, non-commensurate and conflicting objectives must be considered simultaneously. This report is concerned with first investigating a general nonlinear class of these problems and then developing a means of solving problems found in this class. The results are divided into four related areas: (1) identifying properties and relationships which exist within this class of problems and which prove useful to their resolution, (2) developing a user-oriented algorithm, using these properties, to solve nonlinear multiple objective optimization problems, (3) applying the algorithm to a representative problem and (4) modifying the algorithm to address discrete nonlinear multiple objective optimization problems. A decision problem concerned with the expected storm drainage needs of an urban subbasin is analyzed by means of the algorithm. The problem involved minimizing various pollutant loads and costs by adjusting the drainage systems local detention storage capacity, maximum treatment rate and maximum allowable overflow rate. Convergence results are shown for several tradeoff policies.

PB-293 252/3GA PC **A06**/MF **A01**
Nevada Univ. System, Reno. Water Resources Center.
Digital Simulation of Snowmelt Runoff.
Robert G. Merritt. Apr 78, 118p PUB-41055, W79-05091, OWRT-A-076-NEV(1)
Contract DI-14-34-0001-7060
Portions of this document are not fully legible.

Descriptors: *Snowmelt, *Runoff, Digital simulation, Mathematical models, Heat transfer, Moisture content, Atmospheric temperature, Rainfall, Ablation, Convection, Wind velocity, Solar radiation, Thermal radiation, Cloud cover, Flow charting, Fortran, Computer programs, Blackwood Creek, California.

A computer program was developed for snowmelt runoff simulation. The program used the physical equations presented in SNOW HYDROLOGY (Corps of Engineers, U.S. Army, 1956) describing heat budget components involved in snowmelt. The model requires initial snow depth and water equivalent estimates, along with continuous air temperature, dewpoint temperature, wind speed and shortwave and longwave radiation readings as input. If radiation observations are unavailable, the model will estimate missing components. Results show that an improved meteorologic data base is required to gain acceptable snowmelt runoff simulation with the model.

PB-293 330/7GA PC **A99**/MF **A01**
Geological Survey, Menlo Park, CA. Water Resources Div.
Water Resources Data for California, Water Year 1977. Volume 1. Colorado River Basin, Southern Great Basin from Mexican Border to Mono Lake Basin, and Pacific Slope Basins from Tijuana River to Santa Maria River.
Annual rept. 1 Oct 76-30 Sep 77.
Nov 78, 652p USGS/WRD/HD-78/076, USGS/WDR/CA-77-1
Prepared in cooperation with California State Dept. of Water Resources, Sacramento. See also Volume 2 for Water Year 1977, PB-287 895.

Descriptors: *Ground water, *Surface waters, *California, Water quality, Tables(Data), Stream flow, Flow rate, Lakes, Streams, Reservoirs, Temperature.
Identifiers: *Water quality data, *Hydrologic data, Discharge(Water), Water levels.

Volume 1 of water resources data for the 1977 water year for California consists of records of stage, discharge, and water quality of streams; stage, contents, and water quality in lakes and reservoirs; and water levels in wells. This report contains discharge records for 234 gaging stations; stage-only record for 3 gaging stations; stage and contents for 18 lakes and reservoirs; water quality for 72 stations and 2 wells; and water levels for 21 observation wells. Also included are 13 crest-stage partial-record stations. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and Federal agencies in California.

PB-293 358/8GA PC **A05**/MF **A01**
Idaho Univ., Moscow. Dept. of Entomology.
Interacting Effects of Minimum Flow and Fluctuating Shorelines on Benthic Stream Insects.
Technical completion rept. Sep 74-Jun 78,
Merlyn Brusven, and E. Woody Trihey. Aug 78, 88p W79-05233, OWRT-A-052-IDA(1)
Contract DI-14-34-0001-8014

Descriptors: *Aquatic animals, *Insects, *Animal ecology, *Stream flow, *Clearwater River, Electric power plants, Abundance, Distribution(Property), Seasonal variations, Dworshak Dam, Dewatering, Idaho.
Identifiers: *Low flow, Reservoir releases, *Species diversity, Habitats.

A 50 mile (80 km) reach of the Clearwater River, Idaho was studied from its confluence with the Snake River upstream to Orofino, Idaho. The study examined two important changes in the River: (1) effects of hydropower releases from Dworshak Dam on the aquatic insect community in the free flowing reach of the Clearwater River, and (2) backwater effects of Lower Granite Dam on benthos in the lower five mile (8 km) of the Clearwater River. While small to moderate shifts in seasonal densities of principal species have occurred between intensive study sites above and below the influence of Dworshak Dam, evidence does not indicate these shifts are attributable to hydropower releases. Drift rates and standing crop relationships above and below the influence of Dworshak Dam suggest insects drifted more in response to daily fluctuations than to the factor of bottom density.

PB-293 379/4GA PC **A99**/MF **A01**
Geological Survey, Helena, MT. Water Resources Div.
Water Resources Data for Montana, Water Year 1977.
Water-data rept. 1 Oct 76-30 Sep 77 (Annual).
Oct 78, 764p USGS/WRD/HD-78/073, USGS/WDR/MT-77/1
See also report for Water Year 1976, dated Sep 77, PB-278 663.

Descriptors: *Ground water, *Surface waters, *Montana, Water quality, Stream flow, Flow rate, Lakes, Streams, Reservoirs, Water table, Temperature, Tables(Data).
Identifiers: *Water quality data, *Hydrologic data, Discharge(Water), Water levels.

Water resources data for the 1977 water year for Montana consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels in wells. This report contains discharge records for 209 gaging stations; stage only records for 1 lake station; stage and contents for 9 lakes and reservoirs; water quality for 112 stations, 3 lakes; water levels for 23 observation wells. Also included are 191 crest-stage partial-record stations and 52 smaller reservoirs. Additional water data were collected at various sites, not part of the systematic data collection program, and are published as miscellaneous measurements. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and Federal agencies in Montana.

PB-293 493/3GA PC **A99**/MF **A01**
Geological Survey, Cheyenne, WY. Water Resources Div.
Water Resources Data for Wyoming, Water Year 1977. Volume 1. Missouri River Basin.
Water-data rept. (Annual) 1 Oct 76-30 Sep 77.
Oct 78, 627p USGS/WRD/HD-78/075, USGS/WDR/WY-77/1
See also Volume 2, PB-293 494.

Descriptors: *Ground water, *Surface waters, *Wyoming, Water quality, Stream flow, Flow rate, Lakes, Streams, Reservoirs, Water table, Temperature, Tables(Data).

Identifiers: *Water quality data, *Hydrologic data, Discharge(Water), Water levels.

Water resources data for the 1977 water year for Wyoming consists of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels and water quality of wells. This report, in two volumes, contains discharge records for 214 gaging stations; stage only records for 1 lake; stage and contents for 16 lakes and reservoirs; water quality for 117 gaging stations, 41 ungaged stations, 2 reservoirs, 247 wells and springs; and water levels for 45 observation wells. Also included are 101 crest-stage partial-record stations. Additional water data were collected at various sites, not part of the systematic data-collection program, and are published as miscellaneous measurements and analyses. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and federal agencies in Wyoming.

PB-293 494/1GA PC **A21**/MF **A01**
Geological Survey, Cheyenne, WY. Water Resources Div.
Water Resources Data for Wyoming, Water Year 1977. Volume 2. Green River Basin, Bear River Basin, and Snake River Basin.
Water-data rept. (Annual) 1 Oct 76-30 Sep 77.
Dec 78, 493p USGS/WRD/HD-78/080, USGS/WDR/WY-77/2
See also Volume 1, PB-293 493, and report for Water Year 1976, Volume 2, PB-285 744.

Descriptors: *Ground water, *Surface waters, *Wyoming, Water quality, Stream flow, Flow rate, Lakes, Streams, Reservoirs, Water table, Temperature, Tables(Data).
Identifiers: *Water quality data, *Hydrologic data, Discharge(Water), Water levels.

Water resources data for the 1977 water year for Wyoming consists of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels and water quality of wells. This report, in two volumes, contains discharge records for 214 gaging stations; stage only records for 1 lake; stage and contents for 16 lakes and reservoirs; water quality for 117 gaging stations, 41 ungaged stations, 2 lakes and reservoirs, and 247 wells and springs; and water levels for 45 observation wells. Also included are 101 crest-stage partial-record stations. Additional water data were collected at various sites, not part of the systematic data-collection program, and are published as miscellaneous measurements and analyses. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and Federal agencies in Wyoming.

PB-293 516/1GA PC **A06**/MF **A01**
Environmental Research Lab.-Duluth, Grosse Ile, MI. Large Lakes Research Station.
Results of a Joint U.S.A./U.S.S.R. Hydrodynamic and Transport Modeling Project.
Final rept.,
John F. Paul, William L. Richardson, Alexandr B. Gorstko, and Anton A. Matveyev. Feb 79, 103p
EPA/600/3-79/015
Prepared in cooperation with Rostov-on-Don State Univ. (USSR). Inst. of Mechanics and Applied Mathematics, and Hydrochemical Inst., Novocherkassk (USSR).

Descriptors: *Hydrodynamics, *Circulation, *Lakes, *Oceans, Mathematical models, Three dimensional flow, Ocean currents, Wind(Meteorology), Lake Baikal, Sea of Azov, USSR, Saginaw Bay, Lake Huron, United States, Water balance, Dispersing, Chlorides.
Identifiers: *Ocean circulation.

A joint modeling project with scientists from the U.S.A. and U.S.S.R. has been accomplished. The three geographical areas investigated include Lake Baikal and the Sea of Azov in the U.S.S.R. and Saginaw Bay, Lake Huron in the U.S.A. The modeling approaches ranged from those employing material and mass conservation to describe water movement to those involving solution of the complete three-dimensional hydrodynamic equations. The model calculations were compared to available data and, in all cases, reasonable agreement was obtained. This report covers a period from May 1977 to December 1977, and work was completed as of April 1978.

PB-293 522/9GA PC **A18**/MF **A01**
Geological Survey, Lakewood, CO. Water Resources Div.
Water Resource Data for Colorado, Water Year 1977. Volume 3. Dolores River Basin, Green River Basin, San Juan River Basin.
Water-data rept (Annual) 1 Oct 76-30 Sep 77.
Dec 78, 424p USGS/WRD/HD-78/072, USGS/WDR/CO-77/3
See also Volume 1, PB-292 258.

Descriptors: *Ground water, *Surface waters, *Colorado, Water quality, Stream flow, Flow rate, Lakes, Streams, Reservoirs, Water table, Temperature, Tables(Data).
Identifiers: *Water quality data, *Hydrologic data, Discharge(Water), Water levels.

Water-resources data for Colorado for the 1977 water year consists of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs, and water levels and water quality of wells and springs. This report (Volumes 1, 2, and 3) contains discharge records for 424 gaging stations, stage and contents of 25 lakes and reservoirs, 5 partial-record flow stations, 79 crest-stage partial-record stations, and 193 miscellaneous sites; water quality for 134 gaging stations and 60 miscellaneous sites; and water levels for 55 observation wells. A few pertinent stations in bordering States are also included in this report. The records were collected and computed by the Water Resources Division of the U.S. Geological Survey under the direction of J. F. Blakey, district chief. These data represent that portion of the National Water Data System collected by the U.S. Geological Survey and cooperating State and Federal agencies in Colorado.

PB-293 528/6GA PC **A99**/MF **A01**
Geological Survey, Lawrence, KS. Water Resources Div.
Water Resources Data for Kansas, Water Year 1978.
Water-data rept. (Annual) 1 Oct 77-30 Sep 78.
Jan 79, 669p USGS/WRD/HD-79/003, USGS/WDR/KS-78/1
See also report dated Jan 78, PB-285 737.

Descriptors: *Ground water, *Surface waters, *Kansas, Water quality, Stream flow, Flow rate, Lakes, Streams, Reservoirs, Water table, Temperature, Tables(Data).
Identifiers: *Water quality data, *Hydrologic data, Discharge(Water), Water levels.

Water resources data for the 1978 water year for Kansas consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels and water quality in wells. This report contains discharge records for 147 gaging stations; stage and contents for 21 lakes and reservoirs; water quality for 89 gaging stations and 2 lakes; and water levels for about 460 observation wells and water quality for about 460 wells. Also included are data for 100 crest-stage partial-record stations and 23 low-flow partial-record stations. All data in this report represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and Federal agencies in Kansas.

PB-293 534/4GA PC **A16**/MF **A01**
Geological Survey, Baton Rouge, LA. Water Resources Div.
Water Resources Data for Louisiana, Water Year 1978. Volume 2. Southern Louisiana.
Water-data rept. 1 Oct 77-30 Sep 78.
Jan 79, 375p USGS/WRD/HD-79/001, USGS/WDR/LA-78/2
Prepared in cooperation with Louisiana Dept. of Transportation and Development, Baton Rouge. Office of Highways, and Sabine River Compact Administration. Sponsored in part by Fish and Wildlife Service, Washington, DC., and Corps of Engineers, Washington, DC. See also Volume 1, PB-292 412, and Volume 3, PB-293 535.

Descriptors: *Ground water, *Surface waters, *Louisiana, Water quality, Stream flow, Flow rate, Lakes, Streams, Reservoirs, Water table, Temperature, Tables(Data).
Identifiers: *Water quality data, *Hydrologic data, Discharge(Water), Water levels, Southern Region(Louisiana).

Water resources data for the 1978 water year for Louisiana consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels and water quality of ground water. This report, in three volumes, contains discharge records for 76 gaging stations; stage records for 66 of these gaging stations; stage only for 32 gaging stations; contents for 1 reservoir; stage only for 12 lakes; water quality for 147 stations; 22 of these at gaging stations; 80 miscellaneous sites, 10 lakes, and 169 wells; and water levels for 686 observation wells. Also included are 199 crest-stage partial-record stations and flood-profile partial-record stations. Additional water-data were collected at various sites, not involved in the systematic data-collection program, and are published as miscellaneous measurements. Records for a few pertinent stations in bordering States are also included in this report. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and Federal agencies in Louisiana.

PB-293 535/1GA PC **A15**/MF **A01**
Geological Survey, Baton Rouge, LA. Water Resources Div.
Water Resources Data for Louisiana, Water Year 1978. Volume 3. Coastal Louisiana.
Water-data rept. 1 Oct 77-30 Sep 78.
Jan 79, 336p USGS/WRD/HD-79/002, USGS/WDR/LA-78/3
Prepared in cooperation with Louisiana Dept. of Transportation and Development, Baton Rouge. Office of Highways, and Sabine River Compact Administration. Sponsored in part by Fish and Wildlife Service, Washington, DC., and Corps of Engineers, Washington, DC. See also Volume 2, PB-293 534.

Descriptors: *Ground water, *Surface waters, *Louisiana, Water quality, Stream flow, Flow rate, Lakes, Streams, Reservoirs, Water table, Temperature, Tables(Data).
Identifiers: *Water quality data, *Hydrologic data, Discharge(Water), Water levels.

Water resources data for the 1978 water year for Louisiana consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels and water quality of ground water. This report, in three volumes, contains discharge records for 76 gaging stations; stage records for 66 of these gaging stations; stage only for 32 gaging stations; contents for 1 reservoir; stage only for 12 lakes; water quality for 147 stations; 22 of these at gaging stations; 80 miscellaneous sites, 10 lakes, and 169 wells; and water levels for 686 observation wells. Also included are 199 crest-stage partial-record stations and flood-profile partial-record stations. Additional water data were collected at various sites, not involved in the systematic data-collection program, and are published as miscellaneous measurements. Records for a few pertinent stations in bordering States are also included in this report. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and Federal agencies in Louisiana.

PB-293 563/3GA PC **A13**/MF **A01**
Geological Survey, St. Paul, MN. Water Resources Div.
Water Resources Data for Minnesota, Water Year 1977. Volume 1. Great Lakes and Souris-Red-Rainy River Basins.
Water-data rept. (Annual) 1 Oct 76-30 Sep 77.
Sep 78, 287p USGS/WRD/HD-78/067, USGS/WDR/MN-77/1
Prepared in cooperation with Minnesota Dept. of Natural Resources, St. Paul. Div. of Waters., and Minnesota Dept. of Transportation, St. Paul. See also report dated Jul 77, PB-274 319 and Volume 2, PB-293 564.

Descriptors: *Ground water, *Surface waters, *Minnesota, Water quality, Stream flow, Flow rate, Lakes, Streams, Reservoirs, Water table, Temperature, Tables(Data).
Identifiers: *Water quality data, *Hydrologic data, Discharge(Water), Water levels.

Water resources data for the 1977 water year for Minnesota consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels and water quality in wells and springs. This report contains discharge records for 79 gaging stations; stage only records for 1 gaging station; stage and contents for 4 lakes and reservoirs; water quality for 21 gaging stations, 2 partial-record flow station, 4 lakes, and 65 wells; and water levels for 18 observation wells. Also included are 39 crest-stage partial-record stations and 35 low-flow partial-record stations. Additional water data were collected at various sites, not part of the systematic data collection program, and are published as miscellaneous measurements. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and federal agencies in Minnesota.

PB-293 564/1GA PC **A19**/MF **A01**
Geological Survey, St. Paul, MN. Water Resources Div.
Water Resources Data for Minnesota, Water Year 1977. Volume 2. Upper Mississippi and Missouri River Basins.
Water-data rept. (Annual) 1 Oct 76-30 Sep 77.
Sep 78, 437p USGS/WRD/HD-78/068, USGS/WDR/MN-77/2
Prepared in cooperation with Minnesota Dept. of Natural Resources, St. Paul. Div. of Waters., and Minnesota Dept. of Transportation, St. Paul. See also Volume 1, PB-293 563.

Descriptors: *Ground water, *Surface waters, *Minnesota, Water quality, Stream flow, Flow rate, Lakes, Streams, Reservoirs, Water table, Temperature, Tables(Data).
Identifiers: *Water quality data, *Hydrologic data, Discharge(Water), Water levels.

Water resources data for the 1977 water year for Minnesota consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels and water quality in wells and springs. This report contains discharge records for 66 gaging stations; stage and contents for 9 lakes and reservoirs; water quality for 36 gaging stations, 5 partial-record flow stations, 27 lakes, and 15 wells; and water levels for 93 observation wells. Also included are 102 crest-stage partial-record stations and 64 low-flow partial-record stations. Additional water data were collected at various sites, not part of the systematic data collection program, and are published as miscellaneous measurements. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and federal agencies in Minnesota.

PB-294 932/9GA PC **A06**/MF **A01**
National Ocean Survey, Rockville, MD.
Great Lakes Water Levels, 1977. Daily and Monthly Average Water Surface Elevations.
1978, 115p NOAA-79011101
See also report dated May 75, COM-75-11236.

Descriptors: *Datum(Elevation), *Great Lakes, Sea level, Diurnal variations, Periodic variations, Sites, Maps, Tables(Data).
Identifiers: *Water levels.

This annual publication contains Great Lakes water level gage records. It shows for the calendar year, in tabular form, daily and monthly average levels for each gage in the network, the highest and lowest daily average level for each month, and a frequency distribution of daily average levels showing the number of times each month the recorded levels were at, or above, a specific elevation. The gages record water levels in either analog or digital form on strip charts retained by the National Ocean Survey.

8I. Mining Engineering

N79-19170/6GA PC **A08**/MF **A01**
Kentucky Univ., Lexington. Inst. for Mining and Minerals Research.
Development of Methods of Characterizing Coal in Its Plastic State.
Final Report.
W. G. Lloyd. 16 Jul 78, 169p NASA-CR-158371
Contracts NAS7-100, JPL-954920
Subm-Prepared for JPL.

Descriptors: *Coal, *Plastic properties, Heat measurement, Isothermal processes, Microstructure, Mineralogy, Thermodynamic properties.

For abstract, see STAR 1710

PATENT-4 096 912
Not available NTIS
Department of Energy, Washington, DC.
Methods for Minimizing Plastic Flow of Oil Shale During In situ Retorting.
Patent,
A. E. Lewis, and R. G. Mallon. Filed 6 Jun 77, patented 27 Jun 78, 6p PAT-APPL-804 194
Supersedes PAT-APPL-804 194-77.
This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC. 20231 $0.50.

Descriptors: *Oil shales, Carbon dioxide, Fluid flow, *In-situ retorting, Water.
Identifiers: ERDA/040401, *Patents.

For abstract, see ERA citation 04:021616.

PB-292 982/6GA PC **A03**/MF **A01**
North Dakota State Soil Conservation Committee, Bismarck.
Surface Mining Report for Minerals Other than Coal, Calendar Year 1977.
1977, 39p

Descriptors: *Surface mining, *North Dakota, Sands, Gravel, Clay minerals, Land reclamation, Land use.

The North Dakota State Soil Conservation Committee was designated by the Legislature to administer the Surface Mining Reports Law, which requires any person conducting surface mining operations for minerals other than coal, to comply with the reporting requirements of Chapter 38-16 (North Dakota Century Code). This Law requires any person conducting surface mining operations for minerals other than coal, which within one calendar year, removes 10,000 cubic yards or more of earthen material or product, including overburden, or affects one-half acre or more in combined mining operations to report. Minerals included are: cement rock, clay, gravel, limestone, manganese, molybdenum, peat, potash, pumicite, salt, sand, scoria, sodium sulfate, stone, zeolite, or other minerals, but does not include coal. The Surface Mining Report is a list of surface mining operators and their surface mining activities for calendar year 1977 and a list of surface mining operators not required to report for calendar year 1977. Also included is a list of those operators contacted but not conducting surface mining activities and those operators not responding.

PB-293 032/9GA PC **A04**/MF **A01**
Goodyear Aerospace Corp., Akron, OH.
Improving the Brattice Window Method of Measuring Mine Stopping Leakage.
Open file rept.,
Frederick Bloetscher, and Jerry J. Fry. Sep 78, 54p BuMines-OFR-20-79
Contract H0188004

Descriptors: *Mine ventilation, *Leakage, Flow measurement, Stopping, Coal mines, Tests.

To improve the Bureau of Mines brattice window method of measuring mine stopping leakage, an extensive series of laboratory tests and tests in three operating coal mines were conducted. The laboratory tests defined the window coefficients and the accuracy of the method using different measuring techniques for a range of window sizes and shapes with window areas from 0.0873 to 4.0 sq ft for flow velocities through the windows from 100 to 1,000 fpm. The results indicated that for the range of window sizes and window flow velocities investigated, a single window coefficient value can be used with little error for each window size and for each flow direction.

PB-293 208/5GA PC **A03**/MF **A01**
California Univ., Riverside. Dry Lands Research Inst.
Effects of Geothermal Development on the Agricultural Resources of the Imperial Valley.
Claude Johnson. Jan 77, 30p DLRI-12, NSF/RA-770743
Grant NSF-AER75-08793

Descriptors: *Land use, *Imperial Valley, *Agriculture, Agricultural economics, Economic impact, Environmental impacts, California.
Identifiers: *Energy source development, *Geothermal energy conversion, Geothermal fields, Salton Sea geothermal field, Heber geothermal field, Geothermal resources, Brawley geothermal field.

The report describes an agricultural data base which can be used to estimate the physical and economic effects of geothermal energy development on the agricultural environment. A data base is provided for only four selected known Geothermal Resource Areas (KGRA's), but the regionalization effects of agricultural practices enables the data for a given KGRA to be extrapolated to the surrounding areas in which it is located. The Salton Sea KGRA agricultural resource data is representative of the northern valley region; the Brawley KGRA agricultural resource data applies throughout the central valley; the Heber KGRA to the southern valley area.

PB-293 210/1GA PC **A05**/MF **A01**
Battelle Columbus Labs., OH.
Fuel Contaminants: Volume 4. Application of Oil Agglomeration to Coal Wastes.
Final rept. Aug 77-Apr 78,
E. J. Mezey, Seongwoo Min, and Dale Folsom.
Jan 79, 95p EPA/600/7-79/025B
Contract EPA-68-02-2112
See also report dated Jul 76, PB-256 020.

Descriptors: *Fuel contaminants, *Agglomeration, *Coal preparation, Coal supplies, Dewatering, Desulfurization, Air pollution, Residues, Cost analysis, Forecasting, Slurries, Pyrite, Feasibility, Process charting, Design criteria, Performance evaluation.
Identifiers: *Solid wastes, *Waste recycling, *Air pollution abatement, Procedures.

The report gives results of a study of the application of oil agglomeration to coal wastes. There are an estimated 3000-5000 sizeable active and abandoned coal waste piles and impoundments in the eastern U.S. coal fields alone, containing 3 billion tons of refuse, part of which are slurry ponds. The impoundments, containing coal fines from coal preparation/cleaning plants, are a ready reserve of mined fuel for use in times of shortages. It appears that oil agglomeration could contribute significantly to the removal of contaminants before the conversion process is undertaken. The ability of agglomeration to dewater finely ground wet coal also suggests further incorporation of the process in any environmentally sound preparation plant supplying these conversion plants. Early studies indicated that, although agglomeration can effectively remove much of the ash forming minerals, it was unable to separate the liberated pyrite from coal. This program was undertaken to investigate several approaches, identified during the first phase, to enhance pyrite removal during agglomeration and to demonstrate the utility of the technology to reduce the environmental impact of increased quantities of coal cleaning refuse. Study results show that the coal recovered is of better quality than the coal now being shipped from the mine, in that sulfur and ash values are lower. Coal value recoveries were greater than 90%.

PB-293 265/5GA PC **A11**/MF **A01**
Pittsburgh Univ., PA.
Computer Simulation of Coal Preparation Plants.
Final rept. Dec 74-Aug 77,

Byron S. Gottfried. Nov 78, 241p* EPA/600/7-78/211, FE-9000-1

Descriptors: *Coal preparation, *Mathematical models, *Industrial plants, Desulfurization, Computer programs, Fortran, Computerized simulation, Equipment, Washers(Cleaners), Crushers, Sizing screens, Blenders, Splitting, Desulfurization.
Identifiers: *Air pollution abatement, Low sulfur coal, Rotary breakers, Fortran 4 programming language.

The report describes a comprehensive computer program which allows the user to simulate a wide range of coal preparation plant configurations and modes of operation. The program was designed to maximize the yield of clean coal while minimizing the impurities. The configuration, mode of operation, and coal feed can be varied to provide solutions to a wide range of problems. The program is written in modular form using standard features of Fortran IV language.

PB-293 279/6GA PC **A10**/MF **A01**
General Electric Co., Santa Barbara, CA. Center for Advanced Studies.
Compendium Reports on Oil Shale Technology,
G. C. Slawson, Jr., and T. F. Yen. Jan 79, 224p GE77TMP-52, EPA/600/7-79/039
Contract EPA-68-03-2449

Descriptors: *Oil shale, *Reviews, Hydrogenation, Air pollution, Water pollution, Solid waste disposal, Public health, Environmental impacts, Water supply, Availability, Requirements, Industrial water, Water treatment.
Identifiers: Oil shale mining, Retorting, State of the art, Energy source development, Western Region(United States).

This document considers the various production processes (mining, retorting, and oil upgrading) and key environmental factors (organic and inorganic characterization, environmental control, and limitations) related to oil shale development. This state-of-the-art survey supports a study designing a groundwater quality monitoring program for oil shale operations such as that proposed for Federal Oil Shale Lease Tracts U-a and U-b located in northeastern Utah. Hence, the reports emphasize technologies applicable to this development while also providing a general overview of oil shale technology.

PB-293 305/9GA PC **A02**/MF **A01**
Bureau of Mines, Salt Lake City, UT. Salt Lake City Metallurgy Research Center.
Effect of Ion Concentrations on Uranium Absorption from Sodium Carbonate Solutions.
Rept. of investigations,
D. E. Traut, N. M. T. El Hazek, G. R. Palmer, and I. L. Nichols. 1979, 19p BUMINES-RI-8328

Descriptors: *Uranium, *Absorbers(Materials), *Ion exchanging, Hydrometallurgy, Concentration(Composition), Forecasting, Carbonates, Chlorides, Sulfates, Sodium carbonates.

The effect of various ion concentrations on uranium absorption from a sodium carbonate solution by a strong-base, anion resin was investigated by the Bureau of Mines in support of its objective to help assure an adequate uranium supply for future needs. The studies were conducted to improve the recovery of uranium from in situ leaching solutions by ion exchange. The effects of carbonate, bicarbonate, chloride, and sulfate ions were examined. Relatively low (less than 5 g/l) concentrations of chloride, sulfate, and bicarbonate were found to be detrimental to the absorption of uranium. High (greater than 10 g/l) carbonate concentrations also adversely affected the uranium absorption. In addition, the effect of initial resin form was investigated in tests of the chloride carbonate and bicarbonate forms; resin form was shown to have no effect on the absorption of uranium.

PB-293 339/8GA PC **A02**/MF **A01**
Bureau of Mines, Denver, CO. Denver Mining Research Center.
Stress-Induced Failures in Mine Roof.
Rept. of investigations - 1979,
James R. Aggson. 1979, 22p BUMINES-RI-8338

Descriptors: *Coal mines, *Roofs, Loads(Forces), Failure, Stress analysis, Finite element analysis, West Virginia.
Identifiers: *Mine roofs, Mine safety.

This Bureau of Mines report presents a finite element analysis of roof stresses associated with a 4-foot-high by 18-foot-wide underground coal mine entry. This analysis starts with known loading conditions determined in an underground coal mine in West Virginia and is extended to other possible underground loading conditions. The roof failures predicted by the finite element analysis under known loading conditions correlate well with the roof failures observed underground. The most probable failure modes are identified for the various loading conditions considered. Various failure preventive measures are discussed.

PB-293 725/8GA PC **A03**/MF **A01**
Bureau of Mines, Denver, CO. Denver Mining Research Center.
A Flexible Helical Rock Bolt.
Rept. of investigations,
Clarence O. Babcock. 1978, 33p BuMines-RI-8300R

Descriptors: *Mines(Excavations), *Rock bolts, Field tests, Underground supporting, Flexibility, Elastic properties, Tensile properties.
Identifiers: *Helical bolts.

This report describes the results of Bureau of Mines laboratory and preliminary field tests on a rock bolt of helical shape. The flexible construction allows the bolt to maintain a more stable load level than is possible with a straight bolt. Bolt load changes resulting from anchor slippage, blasting shock, or changes in mine geometry with mining advance are minimized. Preliminary field tests were performed at the Kaiser Steel York Canyon mine where the load changes of straight and helical bolts were measured using a vibrating-wire load gage. The field tests were performed to establish the viability of the concept of a helical bolt. The practical usefulness in terms of performance and economics remains to be shown. The change in bolt load for the flexible bolts was one-third that for the straight bolts. There were no malfunctions of the gage, and the bolts maintained a more uniform load than the straight bolts used as controls.

8J. Physical Oceanography

AD-A064 918/6GA PC **A02**/MF **A01**
Woods Hole Oceanographic Institution, MA.
A Visit to the New England Seamounts.
Technical rept.,
J. R. Heirtzler, P. T. Taylor, R. D. Ballard, and R. L. Houghton. 1977, 13p Rept nos. WHOI-79-17, WHOI-CONTRIB-3856
Contract N00014-74-C-0262
Availability: Pub. in American Scientist, v65 n4 p466-472 Jul-Aug 77.

Descriptors: *Seamounts, *Ocean bottom topography, North Atlantic Ocean, Marine geology, Deep submergence vehicles, Volcanoes, Reprints.

No abstract available.

AD-A065 078/8GA PC **A02**/MF **A01**
Woods Hole Oceanographic Institution, MA.
Volatile Organic Compounds in Coastal Seawater.
Technical rept.,
Rene P. Schwarzenbach, Richard H. Bromund, Philip M. Gschwend, and Oliver C. Zafiriou. 12 Jan 78, 21p Rept nos. WHOI-79-24, WHOI-CONTRIB-4079
Contract N00014-74-C-0262
Availability: Pub. in Organic Geochemistry, v1 p93-107 1978.

Descriptors: *Chemical oceanography, *Organic compounds, Volatility, Time series analysis, Sea water, Water chemistry, Coastal regions, Massachusetts, Gas chromatography, Mass spectrometry, Closed loop systems, Biochemistry, Reprints.
Identifiers: Vineyard Sound, *Water pollution detection, Water analysis, Chemica analysis.

No abstract available.

AD-A065 080/4GA PC **A02**/MF **A01**
Woods Hole Oceanographic Institution, MA.
Nonparametric Estimation of the Ocean Bottom Reflection Coefficient.
Technical rept.,
Michael Schoenberg. 16 Dec 77, 11p Rept nos. WHOI-79-19, CONTRIB-4151
Contract N00014-70-C-0205
Prepared in cooperation with Tel-Aviv Univ. (Israel). Dept. of Geophysics and Planetary Sciences.
Availability: Pub. in Jnl. of the Acoustical Society of America, v64 n4 p1165n4 p1165-1170 Oct 78.

Descriptors: *Underwater acoustics, *Ocean bottom, Sound waves, Reprints.
Identifiers: *Acoustic reflection.

No abstract available.

AD-A065 081/2GA PC **A02**/MF **A01**
Woods Hole Oceanographic Institution, MA.
Submersible Observations of the New England Seamounts.
Technical rept.,
Robert L. Houghton, James R. Heirtzler, Robert D. Ballard, and Patrick T. Taylor. 12 Jan 77, 15p Rept nos. WHOI-79-18, WHOI-CONTRIB-3905
Contract N00014-74-C-0262
Prepared in cooperation with Massachusetts Inst. of Tech., Cambridge. Dept. of Earth and Planetary Sciences.
Availability: Pub. in Naturwissenschaften, v64 p348-355 1977.

Descriptors: *Seamounts, Submersibies, North Atlantic Ocean, Observation, Ocean bottom, Seafloor spreading, Volcanoes, Marine geology, Reprints.

No abstract available.

AD-A065 082/0GA PC **A02**/MF **A01**
Woods Hole Oceanographic Institution, MA.
Subantarctic Mode Water.
Technical rept.,
M. S. McCartney. 1977, 23p Rept nos. WHOI-79-5, WHOI-CONTRIB-3773
Contract N00014-74-C-0262, Grant NSF-OCE76-00390
Original contains color plates: All DDC and NTIS reproductions will be in black and white.
Availability: Pub. in A Voyage of Discovery, p103-119 1977.

Descriptors: *Oceanographic data, *Antarctic regions, Salinity, Temperature, Hydrography, Reprints, Thermoclines.
Identifiers: Ocean temperature.

No abstract available.

AD-A065 105/9GA MF **A01**
Rosenstiel School of Marine and Atmospheric Science, Miami, FL.
The Original Data as Observed by R/V COLUMBUS ISELIN during the Equatorial Oceanographic Experiment GATE 1974,
Otis Brown, Walter Dueing, Robert Evans, and Zachariah Hallock. Nov 78, 97p Rept no. DR-78-1
Contract N00014-75-C-0173, Grant NSF-OCD73-00214
Report on Global Atmospheric Research Program. Atlantic Tropical Experiment.
Availability: Microfiche copies only.

Descriptors: *Oceanographic data, Equatorial regions, Oceanographic ships, Air water interactions, Salinity, Drift, Tropical regions.
Identifiers: Columbus Iselin Vessel, Ocean temperature, Profiles, Ocean currents, GARP Atlantic tropical Experiment, GATE project, Atlantic Ocean.

During the second phase of GATE, a current profiling experiment was carried out by research vessels from four nations. The vessels operated at or near the equator in the vicinity of the following longitudes: R/V COLUMBUS ISELIN (U.S.A.) near 28 deg W; R/V ALEXANDER von HUMBOLDT (G.D.R.) near 24 deg W; R/V ACADEMICIAN KURCHATOV (U.S.S.R) near 23 deg 30 min W; and R/V CAPRICORNE (France) near 10 deg W KURCHATOV worked at a fixed position; the other three vessels operated as roving ships. All vessels

were equipped with profiling current meters (PCM's), provided by the University of Miami (see Dueing and Johnson, 1972 for details on instrumentation). Current and temperature profiles were taken in the vicinity of anchored radar reference buoys. Profiling operations were routinely carried out to a water depth of 600 meters, lasting about 2-1/2 hours per profile. During the observation of a relative current profile, radar distance and azimuth to a reference buoy were observed at 10 minute intervals. A mean drift vector over ground was computed and subsequently used to transform the relative current profile into an absolute profile. The relative error of the measurements made by the ISELIN is approximately + or - 8% of the values of the flow components.

AD-A065 204/0GA PC **A02**/MF **A01**
Woods Hole Oceanographic Institution, MA.
A Seismic Refraction Experiment in the Central Banda Sea.
Technical rept.,
G. M. Purdy, and Robert S. Detrick. 1 Nov 77, 17p Rept nos. WHOI-79-20, WHOI-CONTRIB-4047
Contract N00014-74-C-0262, Grant NSF-OCE75-19150
Availability: Pub. in Jnl. of Geophysical Research, v83 nB5 p2247-2257 10 May 78.

Descriptors: Oceanographic data, Seismic data, Indonesia, Sonobuoys, Refraction, Experimental data, Reprints.
Identifiers: *Banda Sea, *Seismic refraction.

No abstract available.

AD-A065 205/7GA PC **A02**/MF **A01**
Woods Hole Oceanographic Institution, MA. Dept. of Chemistry.
Sterol Geochemistry of Sediments from the Western North Atlantic Ocean and Adjacent Coastal Areas.
Technical rept.,
Cindy Lee, John W. Farrington, and Robert B. Gagosian. 23 May 78, 18p Rept nos. WHOI-79-22, WHOI-CONTRIB-4152
Contract N00014-66-C-0241, Grant NSF-DES75-21278
Sponsored in part by Grant NSF-DES74-09991.
Availability: Pub. in Geochemica et Cosmochimica Acta, v43 p35-46 1979.

Descriptors: *Ocean bottom soils, *Sediments, *Geochemistry, North Atlantic Ocean, Coastal regions, Oceanographic data, Reprints.
Identifiers: *Sterols.

No abstract available.

AD-A065 315/4GA PC **A02**/MF **A01**
Woods Hole Oceanographic Institution, MA. Dept. of Geology and Geophysics.
Morphology of Seamounts in the Western Pacific and Philippine Basin from Multi-Beam Sonar Data.
Technical rept.,
Charles D. Hollister, Morris F. Glenn, and Peter F. Lonsdale. 27 Feb 78, 19p Rept nos. WHOI-79-28, WHOI-CONTRIB-4113
Contract N00014-74-C-0262
Prepared in cooperation with Scripps Inst. of Oceanography, La Jolla.
Availability: Pub. in Earth and Planetary Science Letters, v41 p405-418 1978.

Descriptors: *Seamounts, *Ocean bottom topography, Pacific Ocean, Sonar equipment, Bathymetry, Morphology, Volcanoes, Reprints.
Identifiers: *Philippine Sea, Geomorphology.

No abstract available.

PB-293 377/8GA PC **A18**/MF **A01**
Oregon State Univ., Corvallis. School of Oceanography.
CTD Observations Off the Coast of Peru, R/V MELVILLE, 4 March - 22 May 1977, and R/V COLUMBUS ISELIN, 5 April - 19 May 1977,
Adriana Huyer, William E. Gilbert, Richard Schramm, and Dennis Barstow. Nov 78, 408p REF-78-18, NSF/IDOE-79/27, NSF/IDOE/CUEA/DR-55
Grants NSF-OCE76-00594, NSF-OCE76-04825

Descriptors: *Upwelling, *Oceanographic data, Coasts, Ocean temperature, Salinity, Conductivity, Depth, Tables(Data), Profiles, Density(Mass/volume), Sea water, Peru, South Pacific Ocean.
Identifiers: International Decade of Ocean Exploration, Melville vessel, Columbus Iselin vessel, CUEA program.

Observations of temperature and salinity were made off the coast of Peru between 5 degrees S and 15 degrees S from the R/V Melville, 4 March - 22 May 1977, and the R/V Iselin, 5 April - 19 May 1977. These observations were made as part of MAM 77, the final phase of JOINT-II project conducted off Peru by the Coastal Upwelling Ecosystems Analysis Program. Most of the stations were within 200 km of the Peru coast, and between 14 deg 30 min S and 16 deg S. Temperature and salinity data are presented from 430 CTD (Conductivity Temperature Depth) stations, and from 22 bottle stations made while the CTD system was down. Vertical profiles of temperatures, salinity and sigma-t, and listings of the data at standard depths are presented for each station.

PB-293 460/2GA PC **A02**/MF **A01**
Woods Hole Oceanographic Institution, MA.
POLYMODE XBT Survey by the American Research Vessel 'GYRE', 22 January - 5 February 1978.
Nov 78, 15p XBT/TR-78/13, NSF/IDOE-79/2

Descriptors: *Bathythermograph data, *Oceanographic surveys, Thermoclines, Surface temperature, Cooling, Winter, Ocean temperature, Depth, Profiles, Gulf Stream, North Atlantic Ocean.
Identifiers: International Decade of Ocean Exploration, Gyre vessel, Endeavor vessel, POLYMODE project.

The American Research Vessel Gyre carried out an XBT survey of the region just north of the main POLYMODE area between 22 January and 5 February 1978. The Gyre cruise did not overlap with any other POLYMODE XBT surveys, so the Gyre results are presented as a separate report. A comparison between Gyre's observations and those of Endeavor in the same region in mid-December 1977 is made. By late January, a broad tongue of water below 19C has intruded into the northern part of the region in an area that was above 22C in mid-December. In the survey region as a whole, the cooling during the period between the two surveys amounts to approximately 2C. In this survey, winter cooling has progressed to the extent that the seasonal thermocline has disappeared abruptly in the tongue of cool surface water. This seemingly paradoxical situation comes from the fact that in two instances a small and undoubtedly transient temperature inversion lay beneath the cooler-than-19C surface layer. These inversions raised the shallow subsurface temperature to above 19C.

PB-293 628/4GA Not available NTIS
Woods Hole Oceanographic Institution, MA.
Measurement of the Vertical Flux of Particulate Organic Matter with a Free-Drifting Sediment Trap,
Nick Staresinic, Gilbert T. Rowe, Dan Shaughnessey, and Albert J. Williams, III. c1978, 6p WHOI-CONTRIB-3835, NSF/IDOE-79/21
Pub. in Limmol. Oceanography, V23 n3 p559-563, 1978.

Descriptors: *Sediments, *Measuring instruments, Traps, Upwelling, Turbulence, Performance evaluation, Massachusetts.
Identifiers: Reprints, *Oceanographic equipment, International Decade of Ocean Exploration.

Measurements of the vertical flux of particulate organic matter are usually made with moored sediment traps. In situ dye experiments in Buzzards Bay, Massachusetts, suggest that, in a current as low as 15 cm/s, the turbulent wake established over the entrance of such a device may severely bias estimation of both the quantity and quality of material settling through the water column, but that a free-drifting trap is not hampered by this problem. The free-drifting mode also permits shallow deployments in deep-water columns, without the problems accompanying deep moorings, and track of particular water parcels, such as upwelling plumes. (Copyright (c) 1978, by the American Society of Limnology and Oceanography, Inc.)

PB-294 616/8GA PC **A06**/MF **A01**
National Oceanic and Atmospheric Administration, Washington, DC.
Seasat Gulf of Alaska Experiment. Surface Truth Data Inventory,
John C. Wilkerson, and S. Lyn McNutt. 15 Feb 79, 106p NOAA-79031609

Descriptors: *Meteorological data, *Oceanographic data, *Alaska Gulf, Oceanographic surveys, Remote sensing, Feasibility, Inventories, Ocean temperature, Depth, Salinity, Atmospheric temperature, Wind(Meteorology), Ocean waves, Spaceborne detectors, Radiosondes, Aircraft, Ships, Buoys, Performance evaluation, Tables(Data).
Identifiers: Seasat project, Ocean weather stations, Oceanographer vessel.

The launch on June 26, 1978, of Seasat, the National Aeronautics and Space Administration (NASA) experimental ocean-survey satellite, marked the beginning of a proof-of-concept mission to establish the feasibility of monitoring the oceans from space. The experiment was designed to collect in situ physical oceanographic and meteorological data for verification and evaluation of Seasat sensor performance. The Gulf of Alaska Experiment was conducted during the period of August 28 to September 26, 1978, and was carried out from ships, aircraft, and buoys. This report is an inventory of all physical oceanographic and meteorological surface truth data collected during the experiment from each of the participating platforms.

8K. Seismology

AD-A064 871/7GA PC **A04**/MF **A01**
Massachusetts Inst. of Tech., Lexington. Lincoln Lab.
Ocean Bottom Seismometers for Research: A Reassessment.
Technical note,
Joseph D. Phillips, and Douglas W. McCowan. 30 Nov 78, 61p TN-1978-40, ESD-TR-78-255
Contract F19628-78-C-0002, ARPA Order-512

Descriptors: *Seismometers, *Ocean bottom, Tectonics, Seismological stations, Boreholes, Seismographs, Earthquakes, Marine geology, Deep oceans, State of the art, Global.
Identifiers: Performance evaluation, Feasibility, Portable equipment.

An analysis of current ocean bottom seismometer technology has revealed that conventional, free-fall devices which simple rest on the surficial seafloor sediments could provide portable stations with short period performance only equivalent to the higher noise land stations located on islands. However, by emplacing borehole-type seismometers beneath the surficial seafloor sediments, the broadband performance of ocean bottom stations could prove superior to the best land stations. In fact, by combining 'state of the art' broadband digital seismometers with modern deep sea drilling and ocean acoustic or satellite telemetry methods, permanent subseafloor stations with essentially real-time communication are entirely feasible. A plan for preliminary seismic research is suggested. (Author)

AD-A064 988/9GA PC **A02**/MF **A01**
Computer Corp. of America, Cambridge, MA.
SIP Accommodation of Additional Seismic Data Sites.
Technical rept.,
Donald E. Eastlake, III. 29 Jan 79, 19p Rept no. CCA-79-08
Contract N00039-78-C-0246, ARPA Order-3540

Descriptors: *Seismic data, *Data processing equipment, Data links, Data storage systems, Seismometers, Networks, Real time, Minicomputers, Input output processing, Information processing, Data bases.
Identifiers: *Data base management systems, Seismic Input Processors.

The SIP is a dedicated minicomputer communications system developed and operated by Computer Corporation of America. It interfaces a real time seismic information network to the Datacomputer (DORIN and EASTLAKE). The Datacomputer is a

network data utility designed to support very large databases and shared access by remote heterogeneous computers (MARTLL and STERN). It is the only operational general purpose database system capable of handling datasets in excess of a trillion bits (CCA).

AD-A065 031/7GA PC **A02**/MF **A01**
Massachusetts Inst. of Tech., Lexington. Lincoln Lab.
Measurement of mb with a Global Network.
Journal article,
Michael A. Chinnery. 1978, 7p MS-4473, ESD-TR-78-299
Contract F19628-78-C-0002, ARPA Order-512
Availability: Pub. in Tectonophysics, v49 p139-144 1978.

Descriptors: *Seismic data, Networks, Global, Seismic waves, Coefficients, Data reduction, Reprints.

No abstract available.

AD-A065 194/3GA PC **A04**/MF **A01**
University of Southern California, Los Angeles. Dept. of Electrical Engineering.
Suppression of Multiple Reflections.
Interim rept.,
Ja-Sung Lee, and Jerry M. Mendel. 1978, 55p AFOSR-TR-79-0078
Grant AFOSR-75-2797

Descriptors: *Seismographs, *Recursive filters, Seismic reflection, Layers, Earth interior, Transfer functions, Matrices(Mathematics), Operators(Mathematics), Laplace transformation.
Identifiers: Signal processing.

No abstract available.

PB-293 579/9GA PC **A05**/MF **A01**
Geological Survey, Menlo Park, CA. Seismic Engineering Branch.
On the Development of Strong-Motion Instrument Networks in the United States.
Progress rept.,
R. B. Matthiesen. Oct 78, 97p OPEN FILE-78/1024, NSF/RA-780462

Descriptors: *Seismic arrays, *Seismic surveys, *Earthquakes, Project planning, Seismometers, Accelerometers, Buildings, Structures, Seismological stations, Evaluation, History, Planning, Site surveys, Geological faults, Instrumentation, United States.

A plan for the distribution of strong-motion instrumentation throughout the United States is outlined. The present national network of strong-motion instrumentation has evolved through the merger of several programs initiated by different agencies and organizations with objectives ranging from research to regulation. It is the result of the coordination of instrument maintainance and record keeping provided by the Seismic Engineering Branch of the U.S. Geological Survey. Concepts and strategies for planning and directing the development of the program include specific ground-motion and structural response studies. Certain regions in the United States are evaluated, in terms of activities and possibilities, in greater detail than in preliminary studies and make up the bulk of the report. They include the Northern, Central, and Southern California Coasts, Eastern California and Nevada, the Pacific Northwest, the Northern Rockies, Utah and Southeast Idaho, Colorado, New Mexico, Oklahoma, the Mississippi Valley, Ohio, the East Coast, Puerto Rico, Hawaii, and Alaska. The final section presents priorities and implications involved in the implementation of the program.

PB-294 439/5GA PC **A08**/MF **A01**
National Geophysical and Solar-Terrestrial Data Center, Boulder, CO.
Reevaluation of Modified Mercalli Intensity Scale for Earthquakes Using Distance as Determinant.
Technical memo.,
Rutlage J. Brazee. Jan 79, 173p NOAA/TM/EDIS/NGSDC-4, NOAA-79031602

Descriptors: *Earthquakes, *Magnitude, Scale(Ratio), Seismology, Seismic waves, Earth movements, Curve fitting.
Identifiers: Modified Mercalli intensity scale.

An assumption is made that the attenuation of earthquake intensity parallels, or is representative of, the dissipation of earthquake energy and thus varies smoothly with distance outward from the center. A model embodying this concept is developed, based on 400,000 earthquake intensity elements collected by the U.S. Coast and Geodetic Survey and its successor agencies during the period from 1928-74. Curves for each intensity element of the Modified Mercalli Intensity Scale of 1931 are then derived and fitted to the model. A revised intensity scale is assembled by reassigning the intensity elements in accordance with the results of the fitting process.

PB-294 567/3GA PC **A05**/MF **A01**
Stanford Univ., CA. Dept. of Civil Engineering.
Seismic Risk in Chile.
Master's thesis,
Francisco Silva Silva. Oct 73, 95p TR-181, NSF/RA/E-73/544
Grant NSF-GI-39122

Descriptors: *Earthquakes, *Chile, Seismic waves, Seismic epicenter, Probability theory, Earthquake resistant structures, Poisson density functions, Markov processes, Risk.
Identifiers: Earthquake engineering, *Seismic risk.

In treatment earthquake occurrences as probabilistic phenomena, this approach compares different probabilistic models in a study on the development of seismic risk levels in Chile. Acceleration is used to assess the seismic risk in a particular region of the country since damages are related to peak ground acceleration. The report summarizes the historical, geographical backgrounds and tectonics of Chile, and utilizes data containing time, epicentral location, depth, and Richter magnitudes of 3351 earthquakes between 1906 and 1972. Two models for the occurrence of earthquakes are described and their results compared. The Markov process is based on a one-step memory and the Poisson process is based on the assumption that earthquakes occur independently of time and space. In incorporating risk in a planning program, it is suggested that a risk map could be developed, similarly to an iso-acceleration map, in which levels of risk could be defined in terms of additional expense required to prevent structural damage due to the calculated probable ground acceleration. The report includes acceleration maps, probability distribution for acceleration, and chronological listings of Richter magnitudes and epicenter locations of Chilean earthquakes between 1934 and 1972.

8L. Snow, Ice, and Permafrost

N79-19519/4GA PC **A06**/MF **A01**
National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
Preliminary Results of Passive Microwave Snow Experiment During February and March 1978.
A. T. C. Chang, J. C. Shiue, H. Boyne, D. Ellerbruch, and G. Counas. Mar 79, 114p NASA-TP-1408, REPT-7802-F22

Descriptors: *Microwave radiometers, *Multispectral band scanners, *Snow cover, Data acquisition, Density measurement, Drainage, Particle size distribution, Remote sensors, Temperature.
Identifiers: Runoff, Water resources, Remote sensing, Passive detection.

For abstract, see STAR 1710

8M. Soil Mechanics

AD-A065 251/1GA PC **A02**/MF **A01**
University of South Alabama, Mobile. Dept. of Geology and Geography.
Mineralogical and Physical Properties of Gulf Coast Limestone Soils,
W. C. Isphording. 1978, 15p ARO-14105.1-GS
Grant DAAG29-76-G-0328
Availability: Pub. in Transactions-Gulf Coast Association of Geological Societies, v28 p201-214 1978.

Descriptors: *Soils, *Limestone, Weathering, Coastal regions, Soil tests, Ground water, Mexico Gulf.
Identifiers: Gulf Coast Region(United States), Reprints.

No abstract available.

AD-A065 343/6GA PC **A02**/MF **A01**
Oklahoma Univ., Norman.
The Effect of Stress on Strain at the Onset of Tertiary Creep of Frozen Soils,
R. G. Rein, Jr., and V. V. Hathi. 3 Oct 77, 5p ARO-10302.3-EN
Grant DA-ARO-(D)-31-124-72-G32
Availability: Pub. in Canadian Geotechnical Jnl., v15 n3 p424-426 1978.

Descriptors: *Soil mechanics, *Freezing, Creep, Cold weather tests, Stress analysis, Permafrost, Clay, Sand, Loams, Reprints.
Identifiers: *Frozen soils.

No abstract available.

PB-293 049/3GA PC **A03**/MF **A01**
Massachusetts Inst. of Tech., Cambridge. Dept. of Civil Engineering.
Compaction of Sand on a Vertically Vibrating Table,
Ricardo Dobry, and Robert V. Whitman. May 72, 29p R72-23, SOILS PUB-302, NSF/RA/E-72/260
Submitted to ASTM Symposium on Evaluation of Relative Density and Its Role in Geotechnical Projects Involving Cohesionless Soils, Los Angeles, June, 1972.

Descriptors: *Soil compacting, *Vibration tests, Sands, Densification, Stresses, Oscillations, Amplitude, Impact, Mathematical models, Comparison, Spalling, Density(Mass/volume).

A detailed study nas been made of the factors contributing to densification of dry sand on a shaking table. The variables considered were the frequency of vibrations; amplitude of vibrations; size and shape of container. No surcharge was used in any test. The different processes affecting the achieved density were found to be: (1) Repeated change in vertical stress owing to inertia forces within the same when the peak acceleration is less than 1g; (2) rearrangement of particles during free fall, when the peak acceleration just reaches 1g; (3) impact action at the end of free fall, when the peak acceleration exceeds 1g; and (4) spalling of the surface layer by stress wave reflections, when the peak accelerations reach several g's.

PB-293 420/6GA PC **A02**/MF **A01**
Lake Champlain Basin Study, Burlington, VT.
Shoreline Erosion, Lake Champlain.
Final rept.,
Allen S. Hunt. Dec 77, 21p LCBS-03
Prepared by Vermont Univ., Burlington. Report on Lake Champlain Basin Study.

Descriptors: *Soil erosion, *Lake Champlain Basin, Surveys, Embankments, Shores, Maps, Assessments, Evaluation, Vermont, New York, Canada.

The principal objectives of this study have been to collect existing information useful in evaluating shoreline erosion and to survey the distribution and extent of present day erosion on a total of 467 miles of Lake Champlain shoreline. This study has resulted in the compilation of two maps; one illustrates the degree of shoreline erosion, and the second is a materials map showing composition and geomorphic character of the banks.

8N. Terrestrial Magnetism

N79-19520/2GA PC **A02**/MF **A01**
National Aeronautics and Space Administration, Washington, DC.
The Magnetic Anomaly of the Ivreazone.
G. Albert. Mar 79, 22p NASA-TM-75425
Contract NASW-3198

Tran-Transl. Into English from Z. Geophys. (West Germany), V. 40, 1974 p 283-301. Subm-Transl. By Sci. Transl. Serv., Santa Barbara, CA.

Descriptors: *Geomagnetism, *Magnetic anomalies, Amphiboles, Core sampling, Magnetic fields, Seismic waves, Tectonics, Vertical distribution, Wavelengths.
Identifiers: Translations, West Germany.

For abstract, see STAR 1710

9. ELECTRONICS AND ELECTRICAL ENGINEERING

9A. Components

AD-A064 881/6GA PC **A02**/MF **A01**
Hughes Research Labs., Malibu, CA.
Pulse Modulator Behavior of the Liquid Metal Plasma Valve (LMPV).
Technical rept.,
W. Wright, Jr., and J. R. Bayless. Nov 78, 9p DELET-TR-78-28
Contract N60921-76-C-0139

Descriptors: *Discharge tubes, *Plasma devices, *Pulse generators, *Cathodes(Electron tubes), *Electronic switches, Plasmas(Physics), Anodes(Electron tubes), Liquid metals, Metal vapors, Electric current, High voltage, Mercury, Pulses, Response, Condensers(Liquefiers), Vapor pressure.
Identifiers: Liquid metal plasma values, Holdoff voltage, Mercury plasmas.

The LMPV is a mercury-cathode, triggered, closing switch which employs a small area mercury pool and a cooled (-30 C) condensing surface to maintain the conditions for vacuum arc operation. These conditions result in high-voltage capability, fast recovery and high current operation with negligible cathode wear. Therefore, the LMPV was considered to have potential as a high average power closing switch for modulator applications. An LMPV closing switch (LMPVCS) was built at Hughes Research Laboratories and evaluated at ERADCOM at voltages up to 150 kV, currents up to 8 kA peak and 7.5 A average, pulse lengths up to 50 microseconds, and repetition rates up to 250 Hz. The device failed as a result of excessive anode dissipation caused by a long anode fall time on the order of 5 microseconds. Subsequent experimentation has indicated that the fall time is reduced at increased mercury vapor pressures, however, experiments are required to define the relation between the fall time and voltage hold-off capability. (Author)

AD-A064 959/0GA PC **A02**/MF **A01**
EG and G, Inc., Salem, MA.
Development of a Forty Kilovolt Megawatt Average Power Thyratron (MAPS-40).
Technical rept.,
J. Hamilton, S. Merz, R. Plante, D. Turnquist, and N. Reinhardt. Nov 78, 13p DELET-TR-78-30
Contract DAAB07-76-C-1352

Descriptors: *Thyratrons, *Pulse generators, Anodes(Electron tubes), Tube grids, Cathodes(Electron tubes), Superlow frequency, Pulse rate, High power, Copper, Molybdenum, Deuterium, Titanium.

The thyratron which resulted from the MAPS-40 Megawatt Average Power Switch development effort achieved switching of 40 kV and 40 ka with a pulse width of 10 microseconds and a repetition rate of 125 Hz. Operation was in 10- to 15-second bursts at the 1-megawatt average power level. The MAPS 40 embodies new engineering solutions to the problems encountered in high power thyratrons. In this development, careful attention had to be given to the control of operating dissipations, to the storage and dispersal of heat, to the strength and protection of internal tube structures, and to the special requirements of tube and circuit operation at the megawatt level. In the first phase of the program, eight thyratrons were constructed, five of which were delivered to Fort Monmouth for evaluation. Four of these prototype tubes were tested to the specified objectives in short-burst operation, and were subjected to further tests to explore their nominal design capabilities. Seven more tubes have since been built, all of the same design, all of which have met the specified objectives. (Author)

AD-A065 034/1GA PC **A02**/MF **A01**
Massachusetts Inst. of Tech., Lexington. Lincoln Lab.
A Broadband Compound Waveguide Lens.
Journal article,
Andre R. Dion. 11 Oct 77, 5p JA-4747, ESD-TR-78-352
Contract F19628-78-C-0002
Availability: Pub. in IEEE Transactions on Antennas and Propagation, vAP-26 n5 p751-754 Sep 78.

Descriptors: Waveguides, Reprints.
Identifiers: *Waveguide lens.

No abstract available.

AD-A065 047/3GA PC **A08**/MF **A01**
National Materials Advisory Board (NAS-NAE), Washington, DC.
Flammability, Smoke, Toxicity, and Corrosive Gases of Electric Cable Materials.
Final rept.
1978, 162p Rept no. NMAB-342
Contract MDA903-74-C-0167
Errata sheet inserted.

Descriptors: *Electric cables, *Polymers, Flammability, Smoke, Toxicity, Corrosive gases, Insulation, Organic materials, Jackets, Ignition, Flame propagation, Combustion products, Conferencing(Communications).

Organic polymers used as insulation and jacketing materials in electric cables, once ignited, burn and spread fire rapidly. Furthermore these polymeric components generate dense smoke as well as toxic and/or corrosive combustion products that severely limit the ability to control and extinguish a fire. This report contains the formal papers given at a workshop on flammability, smoke, toxicity, and corrosive gases of electric cable materials and in addition includes summaries of the workshop discussion sessions. Based on these activities, a number of conclusions and recommendations are presented for materials and design; testing for flammability, smoke, and toxicity and, to a lesser extent, corrosive gases; and detection devices. (Author)

AD-A065 048/1GA PC **A03**/MF **A01**
EG and G, Inc., Salem, MA. Electronic Components Div.
Plasma Cathode Thyratron.
Tri-annual rept. no. 1, 1 Sep-30 Dec 77,
David Fleischer, and David Turnquist. Sep 78, 33p DELET-TR-77-2704-1
Contract DAAB07-77-C-2704

Descriptors: *Thyratrons, *Cold cathode tubes, *Plasma devices, *Discharge tubes, Plasmas(Physics), Ignition circuits, Tube grids, Trigger circuits, Triodes, Pulse rate.
Identifiers: Hydrogen thratrons, Gas tubes, Jitter.

The objective of this work is to provide a thyratron type device which is capable of cold-start operation; thus eliminating the need for standby power. A replica of a cold-cathode triode, described by Vagin in the Russian literature, was built and tested. The results do not support Vagin's description of its operation. A triode of our own design operates satisfactorily without filament power. A keep-alive or ignitor electrode its proposed as a solution to the high grid breakdown voltage and anode jitter found during the state-up period. (Author)

AD-A065 059/8GA PC **A03**/MF **A01**
Microwave Associates, Inc., Burlington, MA.
MM and T Program for the Establishment of Production Techniques for High Power Bulk Semiconductor Limiters.
Quarterly rept. no. 7, 23 Dec 77-22 Mar 78,
Yoginder Anand, and Richard Bilotta. Apr 78, 33p ECOM-0039-7
Contract DAAB07-76-C-0039

Descriptors: *Limiters, *Avalanche diodes, *P type semiconductors, *Production control, Electrical resistance, Insertion loss, Radiofrequency power, Standing wave ratios, High power, Single crystals, Orientation(Direction), X band, Cavity resonators, Waveguide irises, Copper, Silicon, Fabrication.
Identifiers: Tuned waveguides, Bulk semiconductors, Gold plating, Semiconductor devices.

Confirmatory Samples consisting of twenty(20) X-band bulk limiters and multi-stage clean-up diode limiters were assembled. Bulk limiters were fabricated from high resistivity silicon with RHO = 8,000 - 15,000 ohm-cm, p-type, uncompensated(111) orientation from Wacker Chemical Company. These bulk limiters exhibit 3.0 dB bandwidth of 0.71 - 1.2 GHz and low insertion loss of 0.4 - 0.6 dB. New passivation schemes are being investigated in order to reduce the insertion loss of bulk limiters and also to improve the power handling capability of the bulk limiters. (Author)

AD-A065 074/7GA PC **A08**/MF **A01**
Army Missile Research and Development Command, Redstone Arsenal, AL. Engineering Lab.
Combined Effect of Aging and Neutron Irradiation on Semiconductor Avalanche Voltage.
Technical rept.,
Victor W. Ruwe. Apr 78, 152p Rept no. DRDMI-E-78-14

Descriptors: *Transistors, *Semiconductors, *Neutron irradiation, *Avalanche effect(Electronics), Aging(Materials), Accelerated testing, Transients, Lightning, Nuclear explosions, Gain.
Identifiers: Breakdown voltage, Neutron susceptibility, Activation energy, Overvoltage transients, Radiation effects.

This report presents the results of an investigation into the combined effects of neutron irradiation and aging on the breakdown voltage in transistors. The combined effect was found to be a simple additive effect. It was determined from other results of the investigation that transistor parameters change as a function of the number of times the breakdown voltage is measured and that the gain of the transistor is degraded more if the device has been aged before irradiation than if the device has been irradiated and then aged. This last result brings into question the validity of present methods of establishing neutron susceptibility levels. (Author)

AD-A065 101/8GA PC **A04**/MF **A01**
Rensselaer Polytechnic Inst., Troy, NY. Dept. of Mechanical Engineering Aeronautical Engineering and Mechanics.
Temperature Dependence of the Resonant Frequency of Electroded Doubly-Rotated Quartz Thickness-Mode Resonators.
Technical rept.,
B. K. Sinha, and H. F. Tiersten. Jan 79, 56p Rept no. TR-27
Contract N00014-76-C-0368

Descriptors: *Quartz resonators, *Flat plate models, *Piezoelectric crystals, *Thin films, Nonlinear systems, Thermal stresses, Flexural strength, Frequency, Stability, Strain(Mechanics), Approximation(Mathematics), Gold, Electrodes, Vibration, Substrates, Piezoelectricity, Anisotropy, Elastic properties.
Identifiers: Thermoelasticity, Flexural stresses.

A system of approximate equations for the determination of thermal stresses in piezoelectric plates with large thin films of a different material plated on the surfaces is derived. The plate equations are obtained by making a suitable expansion of the pertinent variables in the thickness coorinate, inserting the expansion in the appropriate variational principle and integrating with respect to the thickness in the manner of Mindlin. Conditions resulting in both extensional and flexural stresses are considered and the full anisotropy of the quartz is included in the treatment. The particular case of purely extensional thermal stresses resulting from large electrodes of equal thickness plated on the major surfaces of doubly-rotated quartz thickness-mode resonators is treated in detail. The changes in resonant frequency resulting from the thermally induced biasing stresses and strains are determined from an existing perturbation equation. Calculations, using the newly defined first temperature derivatives of the fundamental elastic constants of

quartz, are performed for large gold electrodes on doubly-rotated quartz plates. (Author)

AD-A065 141/4GA PC **A03**/MF **A01**
Microwave Associates, Inc., Burlington, MA.
MM and T Program for the Establishment of Production Techniques for High Power Bulk Semiconductor Limiters.
Quarterly rept. no. 8, 23 Mar-22 Jun 78,
Yoginder Anand, and Richard Bilotta. Jul 78, 45p ECOM-0039-8
Contract DAAB07-76-C-0039

Descriptors: *Limiters, *Avalanche diodes, *P type semiconductors, *Production control, Electrical resistance, Insertion loss, Radiofrequency power, Standing wave ratios, Orientation(Direction), Single crystals, High power, Wafers, X band, Silicon, Fabrication.
Identifiers: Bulk semiconductors, Semiconductor devices.

X-band bulk limiters of 3.5 mils in thickness are being fabricated using relatively low resistivity silicon, RHO = 4,000 ohm-cm, p-type, uncompensated (111) orientation. Twenty (20) Confirmatory Samples were fabricated and are presently being subjected to various environmental tests. (Author)

AD-A065 161/2GA PC **A06**/MF **A01**
IRT Corp., San Diego, CA.
Hardness Assurance Guidelines for Displacement Effects for Bipolar Devices.
Rept. for Jul 77-Mar 78,
Robert A. Berger. May 78, 115p IRT-8166-003, HDL-CR-78-135-1
Contract DAAG39-77-C-0135
See also AD-A065 162.

Descriptors: *Integrated circuits, *Bipolar transistors, *Neutron irradiation, *Radiation hardening, Quality assurance, Radiation damage, Instructions, Confidence level, Avalanche Diodes, Transistor transistor logic, Field effect transistors, Operational amplifiers, Circuit analysis.

The objective of this document is to provide an effective means of obtaining semiconductor devices whose neutron-induced response is within known and acceptable limits. The scope of the effort was limited to those procedures for the neutron environment for bipolar transistors, zener diodes, TTL (54/74) series digital integrated circuits, 741-type operational amplifiers, and junction field effect transistors. The objective is met by imposing two levels of Hardness Assurance controls on both the supplier and the user. The supplier levels are called control levels, whereas for the user they are quality levels. For the supplier the difference between levels 1 and 2 are the numbers of Hardness Assurance controls to which the part is subjected in order to be qualified (control level 2 requires screens and process controls, and level 1 is achieved by adding inspection lot radiation tests. For the user, the difference between quality levels 1 and 2 is their lot quality, i.e., the percent of devices in each lot which pass the failure criteria. In level 2 lots, > or = 80 percent of the devices will pass the K sub D criteria with 90 percent confidence. Level 1 screening is designed such that 99.9 percent of the devices in bipolar transistor lots will pass. (Author)

AD-A065 162/0GA PC **A03**/MF **A01**
IRT Corp., San Diego, CA.
Hardness Assurance for Neutron-Induced Displacement Effects in Semiconductor Devices.
Final rept.,
Robert A. Berger. 22 May 78, 37p IRT-8166-004-REV-1, HDL-CR-78-135-2
Contract DAAG39-77-C-0135
See also rept. no. IRT-8166-003 dated May 78, AD-A065 161.

Descriptors: *Integrated circuits, *Bipolar transistors, *Neutron irradiation, *Radiation hardening, Quality assurance, Radiation damage, Confidence level, Avalanche Diodes, Transistor transistor logic, Field effect transistors, Operational amplifiers, Circuit analysis, Regression analysis, Confidence limits.

The objective of this program phase was to provide an effective means of purchasing semiconductor devices whose neutron-induced response is within known and acceptable limits. The scope of the effort was limited to those procedures for the neutron environment for bipolar transistors, temperature-compensated reference diodes, TTL(54/74) series digital integrated circuits, 741-type operational amplifiers and junction field effects transistors(JFET's). This final report covers the method by which the program objectives were met and provides background information for the companion document 'Hardness Assurance Guidelines for Displacement Effects for Bipolar Devices' (HDL-CR-78-135-1). Specifically this final report covers background lot sample statistical methods, assesses existing CRIC experimental neutron device data, and provides the background rationale for the selection of the Hardness Assurance controls. (Author)

AD-A065 253/7GA PC **A02**/MF **A01**
Georgia Inst. of Tech., Atlanta.
Transient Temperature Profiles within the Active Region of Uniformly Doped and High-Low Doped Schottky IMPATT's,
John W. Amoss, and Thomas B. Elfe. 21 Feb 78, 8p ARO-13775.1-ELX
Grant DAAG29-76-G-0202
Availability: Pub. in IEEE Transactions on Electron Devices, vED-25 n9 p1160-1166 Sep 78.

Descriptors: *IMPATT diodes, *Schottky barrier devices, Doping, Transients, Reprints.
Identifiers: Current densities, Semiconductor doping.

No abstract available.

AD-A065 410/3GA PC **A08**/MF **A01**
Federal Aviation Administration, Washington, DC. Systems Research and Development Service.
Federal Aviation Administration - Florida Institute of Technology Workshop on Grounding and Lightning Technology Held at Melbourne, Florida, on March 6-8, 1979.
Final rept.
Mar 79, 157p Rept no. FAA-RD-79-6

Descriptors: Measurement, Protective equipment, Aircraft, Electronic equipment.
Identifiers: *Electrical grounding, *Lightning protection.

A state-of-art review and background research reveals a number of opinions as to the preferred techniques for providing grounding and lightning protection of electronic equipment and systems. The Systems Research and Development Service and the Flight Standards Service of the Federal Aviation Administration in conjunction with the Florida Institute of Technology conducted a workshop which brought together distinguished experts in the fields of grounding, lightning phenomenology and transient protection. This year the format of the workshop was expanded to include the effects of direct strikes and induced lightning on aircraft and their contents as well as lightning detection and warning systems. This report contains the papers presented at the workshop. A supplementary report will be issued containing the papers which were not available for printing before the workshop. (Author)

AD-A065 426/9GA PC **A02**/MF **A01**
Rome Air Development Center, Hanscom AFB, MA. Deputy for Electronic Technology.
Steady-State and Transient Radiation Effects in Precision Quartz Oscillators,
Paul Pellegrini, Ferdinand Euler, Alfred Kahan, Terry M. Flanagan, and Theodore F. Wrobel. 1978, 8p Rept no. RADC/ETR-79-0003
Availability: Pub. in IEEE Transactions on Nuclear Science, vNS-25 n6 p1267-1273 Dec 78.

Descriptors: *Quartz resonators, *Crystal oscillators, Transient radiation effects, Gamma rays, Thermal properties, Preparation, Reprints.

No abstract available.

AD-A065 431/9GA PC **A02**/MF **A01**
Hughes Research Labs., Malibu, CA.
The Crossed-Field Closing Switch - A Status Report.
Research and development technical rept.,
R. J. Harvey, R. W. Holly, J. Creedon, and H. Gauch. Nov 78, 8p DELET-TR-78-29
Contract DAAB07-77-C-2703

Descriptors: *Pulse generators, *Electric switches, Modulators, Electrical loads.
Identifiers: Crossed field closing switches.

No abstract available.

NTIS/PS-79/0396/6GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
IMPATT Diodes (Citations from the NTIS Data Base).
Rept. for 1964-Apr 79,
William E. Reed. May 79, 193p*
Supersedes NTIS/PS-78/0380, NTIS/PS-77/0354, NTIS/PS-76/0356, and NTIS/PS-75/149. For the companion Published Searches of the Engineering Index Data Base, see NTIS/PS-79/0397 and NTIS/PS-79/0398.

Descriptors: *Avalanche diodes, *Bibliographies, Design, Microwave equipment, Reliability(Electronics), Utilization, Silicon, Gallium arsenides, Abstracts.
Identifiers: *IMPATT diodes.

Government-sponsored research reports are cited covering the design, characterization, and applications of IMPATT diodes. Topics include reliability, power handling, properties, noise, fabrication, and radiation effects. Studies are included on the use of silicon and gallium arsenide IMPATT diodes for microwave generation and amplification. (This updated bibliography contains 182 abstracts, 14 of which are new entries to the previous edition.)

NTIS/PS-79/0397/4GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
IMPATT Diodes. Volume 1. 1975-1977 (Citations from the Engineering Index Data Base).
Rept. for 1975-77,
William E. Reed. May 79, 244p*
For the companion Published Search of the NTIS Data Base, See NTIS/PS-79/0396.

Descriptors: *Avalanche diodes, *Bibliographies, Design, Microwave equipment, Reliability(Electronics), Silicon, Gallium arsenides, Abstracts.
Identifiers: IMPATT diodes.

Research reports covering the design, characterization, and applications of IMPATT Diodes are cited from worldwide research. Topics include reliability, power handling, properties, noise, fabrication, and mathematical analysis. The use of silicon and gallium arsenide IMPATT diodes for microwave generation and amplification are included. (This updated bibliography contains 238 abstracts, none of which are new entries to the previous edition.)

NTIS/PS-79/0398/2GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
IMPATT Diodes. Volume 2. 1978-April, 1979 (Citations from the Engineering Index Data Base).
Rept. for 1978-Apr 79,
William E. Reed. May 79, 115p*
Supersedes NTIS/PS-78/0381, NTIS/PS-77/0355, and NTIS/PS-76/0357. For the Companion Published Search of the NTIS Data Base, see NTIS/PS-79/0396. See also Volume 1, 1975-1977, NTIS/PS-79/0397.

Descriptors: *Avalanche diodes, *Bibliographies, Design, Microwave equipment, Reliability(Electronics), Utilization, Silicon, Gallium arsenides, Abstracts.
Identifiers: *IMPATT diodes.

Research reports covering the design, characterization, and applications of IMPATT Diodes are cited from worldwide research. Topics include reliability, power handling, properties, noise, fabrication, and mathematical analysis. The use of silicon and gallium arsenide IMPATT diodes for microwave generation and amplification are included. (This updated bibliography contains 108 abstracts, all of which are new entries to the previous edition.)

N79-19225/8GA PC **A03**/MF **A01**
Liverpool Univ. (England). Dept. of Electrical Engineering and Electronics.
Flow Computations for the Near Upstream Electrode Region of a Gas Blast Circuit Breaker.
P. J. Shayler, and M. T. C. Fang. Feb 78, 36p ULAP-T-55

Descriptors: *Circuit breakers, *Electrodes, Compressible flow, Nozzle flow, Numerical analysis, Separated flow.
Identifiers: Great Britain.

For abstract, see STAR 1710

PAT-APPL-6-008 028/GA PC **A02**/MF **A01**
Department of the Navy Washington DC
Flexible, Shapeable, Composite Acoustic Transducer.
Patent Application,
Roy W. Rice, and Robert C. Pohanka. Filed 31 Jan 79, 13p AD-D005 824/8
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

Descriptors: *Patent applications, *Composite materials, *Transducers, *Piezoelectric transducers, Piezoelectric materials, Electrostriction, Polarization, Fabrication, Ceramic materials, Silicones, Polyvinylidenes, Fluoropolymers, Wafers, Electrodes, Coatings.
Identifiers: Polyvinyl fluoride.

This invention is directed to acoustical energy transducers formed by a composite material comprising electroacoustic (ferroelectric, piezoelectric, or electrostrictive) ceramic wafers or platelets (mm size) arranged in the same x-y plane within a flexible, preferably electroelastic, polymer such as silicone or PVF2. The wafers are axially polarized prior to placement into the composite electroded on their surface and oriented in a specific direction when placed within the composite. The polarization is perpendicular to the plane of the wafer (designated herein as 'axial polarization') and all wafers are oriented so that their positive poles are on the same side of the plane passing through all the wafers.

PAT-APPL-6-011 976/GA PC **A02**/MF **A01**
Department of the Navy Washington DC
Optical Fiber-to-Fiber Evanescent Field Coupler.
Patent Application,
Sang Keum Sheem. Filed 14 Feb 79, 16p AD-D005 829/7
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

Descriptors: *Patent applications, *Fiber optics transmission lines, *Couplers, Couplings, Etching, Cleaning, Housings.

The patent application relates to a single-mode or multimode, optical, fiber-to-fiber coupler which couples such fibers together so that an optical beam guided by one fiber is coupled to the other fiber through evanescent field coupling. In coupling fibers together, the plastic coating is removed along a desired length of each fiber. The fibers are twisted or braided together and cladding is etched to a desired diameter in a suitable housing. After etching, the etchant is drained and the fibers and inside of the housing are cleaned by any suitable cleaning solution. Subsequent to cleaning, the housing is filled with a solution or material which has an index of refraction which is less than that of the core. It has been determined that coupling efficiency can be controlled simply by adjusting the tension of the coupling fibers. (Author)

PATENT-4 133 935 Not available NTIS
Department of the Navy Washington DC
Coated Electrodes for Underwater Metal Working.
Patent,
Thomas J. Dawson. Filed 17 Nov 77, patented 9 Jan 79, 4p AD-D005 810/7, PAT-APPL-852 382
Supersedes PAT-APPL-852 382-77.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $0.50.

Descriptors: *Patents, *Electrodes, *Protective coatings, Underwater construction, Metalworking, Waterproofing, Polyethylene.
Identifiers: PAT-CL-428-379, Polyolefin.

A waterproof electrode, useful in metal-working, is obtained by coating the electrode with a polyolefin selected from the class consisting of polyethylene, polypropylene, polybutylene, and mixtures thereof at a thickness from 0.25 cm to 0.80 cm by a method which comprises placing the electrode inside a polyolefinic heat-shrinkable tubing of a length sufficient to cover at least 0.6 cm of the bare metal of an electrode with a flux coating and sufficient to extend at least 0.8 cm beyond the electrode and with a diameter and a shrinkability sufficient to bring the polyolefin in contact with the bare metal of a flux-coated electrode. (Author)

9B. Computers

AD-A064 845/1GA PC **A06**/MF **A01**
Carnegie-Mellon Univ., Pittsburgh, PA. Dept. of Computer Science.
Research in Information Processing.
Final rept. 1 Jul 76-30 Jun 78,
Allen Newell, and Joseph Traub. Dec 78, 119p AFOSR-TR-79-0043
Contract F44620-73-C-0074, ARPA Order-2466

Descriptors: *Information processing, Multiprocessors, Image processing, Computer programs, Speech recognition, Artificial intelligence, Computer aided design, Compilers, Heuristic methods, Problem solving, Algorithms, Programming languages, Computer architecture, Computer applications.

The report is organized as five chapters under five major areas of research: Image Understanding systems, Speech Understanding systems, Machine Intelligence, Software Technology, and Multiprocessors. Each chapter is self-contained and can be read without reading the entire report.

AD-A064 872/5GA PC **A07**/MF **A01**
General Research Corp., Santa Barbara, CA.
JOVIAL Automated Verification System.
Final technical rept. Jun 77-Jul 78,
C. Gannon. Dec 78, 144p RADC-TR-78-247
Contract F30602-77-C-0115

Descriptors: *Computer program verification, Computer programs, Analyzers, Test methods, User needs, Programming languages, Syntax.
Identifiers: JOVIAL Automated Verification Systems, JAVS system, JOVIAL programming language, JOVIAL J3 programming language.

JAVS, for JOVIAL Automated Verification System, provides measurements of testing thoroughness, retesting assistance, and automated software documentation for JOVIAL J3 programs. This report describes the design, implementation and testing of a new JAVS syntax analyzer. Background information regarding all JAVS contracts is provided in this report, as are procedures for installing the complete JAVS software package. Familiarity with the JOVIAL language and with software verification terminology is assumed. (Author)

AD-A064 877/4GA PC **A03**/MF **A01**
Naval Postgraduate School, Monterey, CA.
User's Guide to the Time Series Editor.
Technical rept.,
F. Russell Richards, and Stephen R. Woodall. Nov 78, 32p Rept no. NPS-55-78-035

Descriptors: *Time series analysis, Computer programs, Input output processing, Instruction manuals, Editing, Fortran, Iterations.
Identifiers: Box-Jenkins method, User manuals.

This report provides a user's guide to the Time Series Editor, an interactive software package for time series analysis. Data input requirements are explained; the capabilities of the software package are explained; and output options are described. A sample user session is given with actual input and output provided. Error correction and recovery techniques are described. This guide is included in AD-A064 901 as Appendix A.

AD-A064 883/2GA PC **A03**/MF **A01**
Naval Weapons Support Center, Crane, IN.
A Modification of the NASA PAC 2 Code to Read Input from Tape.
Rept. for 1 Jul 75-1 Aug 77,
John E. Tanner, Jr., and Joseph J. Angotti. 1 Sep 78, 37p Rept no. NWSC/CR/RDTR-81

Descriptors: Computer programs, Editing, Fortran, Data processing, Thermodynamics, Computer printouts, Thermochemistry, Input, Tapes.
Identifiers: *Magnetic tapes, *Specific heat, *Entropy, *Enthalpy, Thermodynamic properties, Transition points, Fortran 4 programming language.

The NASA Code Fortran IV Program for Calculation of Thermodynamic Data by B. J. McBride and S. Gordon (NASA TN D-4097 dated 1967) has been modified to optionally allow the thermodynamic functions - heat capacity, entropy, and enthalpy - to be read from the magnetic tape of the JANAF Thermochemical Tables furnished by the Dow Chemical Company rather than from cards. The program has also been modified to calculate these thermodynamic functions at the transition points. This previsously had to be done by hand. (Author)

AD-A064 901/2GA PC **A08**/MF **A01**
Naval Postgraduate School, Monterey, CA.
An Interactive Software Package for Time Series Analysis.
Technical rept.,
F. Russell Richards, and Stephen R. Woodall. Nov 78, 168p Rept no. NPS-55-78-034

Descriptors: *Time seris analysis, Computer programs, Input output processing, Time sharing, Instruction manuals, Iterations, Mathematical prediction, Editing, Fortran, Forecasting, Algorithms.
Identifiers: Box-Jenkins Method, Time Series Editor system.

An expanded package of interactive FORTRAN computer programs has been developed for the analysis and forecasting of time series data. The package, called the Time Series Editor, is designed to employ the iterative Box-Jenkins methodology of time series analysis. The Time Series Editor was developed for time-shared use on the Control Program/Cambridge Monitor System (CP/CMS) at the U.S. Naval Post-graduate School, but can be modified for use on other time-sharing systems with a FORTRAN capability. The Time Series Editor assists in data preparation and entry, analysis, modeling, forecasting and diagnostic testing. Utilization of the package, following the included User's Guide, requires only a limited knowledge of the computer system, with all required user responses interactively prompted by the Editor. Appendix A, User's Guide, is available separately as AD-A064 877.

AD-A064 910/3GA PC **A06**/MF **A01**
TRW Defense and Space Systems Group, Redondo Beach, CA.
SMITE Installation and Analysis.
Final technical rept. May 77-May 78,
B. Press, and L. A. Prentice. Dec 78, 103p TRW-30417-6003-RU-00, RADC-TR-78-212
Contract F30602-77-C-0089

Descriptors: *Computer architecture, *High level languages, Computerized simulation, Installation, Systems analysis, Compilers, Microprogramming, Digital computers.
Identifiers: *Emulators(Computers), SMITE programming language, QM-1 computers.

RADC is currently building a computer emulation facility to assist in evaluation of hardware/software/firmware tradeoffs necessary in the development of system architectures. As part of this effort, RADC has purchased a QM-1 microprogrammable computer which is designed to run computer emulations, and to get access to SMITE which is a Higher Order Language for describing computer architecture emulations and a compiler which produces code to emulate said architectures on the QM-1 computer. This effort also studied the possibility of being able to extend SMITE to make it a

more useful hardware description language. This report presents the findings and conclusions of research and studies into the use of extensible features within the SMITE Language. SMITE is a computer hardware description language that produces an emulation of the machine that can be loaded and run on a QM-1 computer. The extensibility feature will allow the description of nonstandard architectures and architectures not yet envisioned.

AD-A064 962/4GA PC **A13**/MF **A01**
Yale Univ., New Haven, CT. Dept. of Computer Science.
Subjective Understanding: Computer Models of Belief Systems.
Research rept.,
Jaime Guillermo Carbonell. Jan 79, 300p Rept no. RR-150
Contract N00014-75-C-1111
Doctoral thesis.

Descriptors: *Pereption(Psychology), Models, Computer programs, Computerized simulation, Natural language, Artificial intelligence, Semantics.
Identifiers: *Political attitudes, POLITICS system, Theses, Thinking.

Modeling human understanding of natural language requires a model of the processes underlying human thought. No two people think exactly alike; different people subscribe to different beliefs and are motivated by different goals in their activities. A theory of subjective understanding has been proposed to account for subjectively-motivated human thinking ranging from ideological belief to human discourse and personality traits. A process-model embodying this theory has been implemented in a computer system, POLITICS. POLITICS models human ideological reasoning in understanding the natural language text of international political events. POLITICS can model either liberal or conservative ideologies. Each ideology produces a different interpretation of the input event. POLITICS demonstrates its understanding by answering questions in natural language question-answer dialogs.

AD-A064 989/7GA PC **A07**/MF **A01**
Computer Corp. of America, Cambridge, MA.
Program Listings for SWF-D: The Signal Waveform File Demon.
Technical rept.,
Joanne Z. Sattley. 31 Jan 79, 133p Rept no. CCA-79-10
Contract N00039-78-C-0246, ARPA Order-3540

Descriptors: *Computer program documentation, *Signal processing, Computer programming, Waveforms, Executive routines, Data processing, Subroutines, Computer files.
Identifiers: SWF-D computer program, Computer programs.

This document contains listings of the SWF-D program source-code and data definitions. The source-code is divided here into sections, each of which represents a separately compiled program module and, to facilitate referencing, subsection numbers have been assigned to several of the more interesting routines within the modules. Global data definitions, constants and variables are listed in the Appendix.

AD-A065 004/4GA PC **A04**/MF **A01**
Polytechnic Inst. of New York, Brooklyn. Dept. of Electrical Engineering and Electrophysics.
On the Number of Tests Necessary to Verify a Computer Program.
Interim rept. Jan-Aug 78,
G. S. Popkin, and M. L. Shooman. Nov 78, 72p POLY-EE78-0472, RADC-TR-78-229
Contract F30602-78-C-0057

Descriptors: *Computer program verification, Linear programming, Integer programming, Flow charting, Matrix displays, Matrix theory, Input output processing, Algorithms.

This report discusses the use of flowchart graphs, adjacency matrices, and zero-one linear programming to find the minimum number of tests necessary to execute every segment of a computer program at least once. The methods of Lipow are used as the basis for determining the maximum incomparable set, i.e., the largest set of program segments through which one and only one test case should pass. The size of the maximum incomparable set gives the minimum number of tests necessary to execute each segment at least once, while the elements of this set give the paths of each test. The report develops methods for finding the maximum incomparable set for loopless and some elementary looping flowcharts. (Author)

AD-A065 044/0GA PC **A06**/MF **A01**
Harris Corp., Melbourne, FL. Electro-Optics Dept.
Automatic Correlation Measurement Experiments.
Final technical rept.,
F. B. Rotz, and M. W. Shareck. Dec 78, 116p RADC-TR-78-250
Contract F30602-76-C-0381

Descriptors: *Optical processing, *Image processing, Matched filters, Laser beams, Correlation techniques, Pattern recognition, Power spectra, Spectral energy distribution, Charge transfer, Injection.
Identifiers: Parallax, Feature extraction, Charge injection devices, Image Matched Filter system.

This exploratory development describes a continuing effort to develop coherent optical processing techniques applicable to the automatic parallax measurement process. An attempt to develop a feature extraction process employing the Image Matched Filter (IMF) system produced insignificant results and may warrant further investigation. (Author)

AD-A065 060/6GA PC **A05**/MF **A01**
General Electric Co., Daytona Beach, FL. Space Div.
System Description - Aviation Wide-Angle Visual System (AWAVS) Computer Image Generator (CIG) Visual System.
Final rept.,
D. V. Morland. Feb 79, 86p NAVTRAEQUIPC-76-C-0048-1
Contract N61339-76-C-0048

Descriptors: *Flight simulation, Computer programs, Computerized simulation, Wide angles, Display systems, Real time, Data bases.
Identifiers: *Viewers, Visual field.

This report provides an overall description of the Aviation Wide Angle Visual System (AWAVS) Computer Image Generator (CIG) System installed at the Naval Training Equipment Center in Orlando, Florida. The report includes descriptions of system functions and capabilities, system hardware, and new technology features incorporated in the CIG System design. (Author)

AD-A065 087/9GA PC **A09**/MF **A01**
Honeywell Information Systems, Inc., Minneapolis, MN.
Virtual Machine Monitor Performance Analysis.
Final technical rept. Jun 77-Sep 78,
S. C. Vestal, T. Krocak, H. S. Schwenk, and A. Levy. Dec 78, 178p RADC-TR-78-251
Contract F30602-77-C-0097

Descriptors: Computer programs, Computer architecture, Systems analysis, Data processing equipment.
Identifiers: *Computer performance evaluation.

This report describes the H6180 Virtual Machine Monitor Performance Analysis. Included as part of this report is a description of the Virtual Machine Monitor. This report also includes an approach for enhancing the baseline VMM functionality by use of a service machine to control peripheral sharing. The actual experimentation performed in this effort identifies the feasibility of a VMM in a Programming Environment and the performance tradeoffs required for its optimized utilization. (Author)

AD-A065 111/7GA PC **A04**/MF **A01**
MITRE Corp., Bedford, MA.
A Validation Technique for Computer Security Based on the Theory of Constraints.
Frederick C. Furtek. Dec 78, 67p MTR-3661, ESD-TR-78-182
Contract F19628-78-C-0001

Descriptors: *Data processing security, Algorithms, Information processing, Automation, Computer program documentation.
Identifiers: LISP programming language, Computer programming.

A validation technique is described that is both necessary and sufficient to test for security compromise. A LISP program documented in this report automates a substantial portion of the validation process. The theory of constraints, which incorporates elements of switching theory and automata theory, provides the mathematical foundation. In addition to detecting compromise, the approach may be used to prove a wide range of properties about system behavior. The technique is suited to both hardware and software, and is applicable at various levels of specification. (Author)

AD-A065 145/5GA PC**$7.50**/MF**$7.50**
Federal Cobol Compiler Testing Service Washington, DC.
Handbook For Estimating Conversion Costs of Large Business Programs.
Final rept.,
Paul Oliver. 15 Feb 79, 47p Rept no. FCCTS/TR-79/01
(PC E04/MF E04)

Descriptors: *Cost estimates, Data storage systems, Handbooks, Data management, High level languages, Conversion, Resources, *Data processing.

This handbook is intended to assist a manager in making estimates of conversion costs for large, business/administrative data processing systems. It assumes that source programs are in a higher-level language (probably COBOL), but most of the procedures are applicable to any conversion. The 'production' phase would be the one most affected by deviations from these assumptions. The user of the handbook will note that many cost components are not quantified. This was done in those cases where a generalized rule of thumb, out of context, is simply not available. Thus, the user will have to supply his own figures. In all cases, estimates given are not to be taken as universal truths. A user of this handbook should not feel constrained by these estimates if his knowledge of his specific situation suggests different estimates. (Author)

AD-A065 182/8GA PC **A04**/MF **A01**
Massachusetts Inst. of Tech., Lexington. Lincoln Lab.
Computer Simulation Model for a Digital Communications Network Utilizing an Embedded Speech Encoding Technique.
Technical note,
Stephanie Seneff. 20 Oct 78, 64p TN-1978-33, ESD-TR-78-274
Contract F19628-78-C-0002, ARPA Order-2006

Descriptors: *Digital systems, *Communications networks, *Voice communications, *Data transmission systems, Integrated systems, Vocoders, Computerized simulation, Adaptive systems, Message processing, Data links, Feedback, Nodes.
Identifiers: Packet networks, Embedded speech techniques, Speech packets, Data packets, PVC(Packetized Virtual Circuit), Priorities, Pulse communication, Coding, Telecommunication.

This note describes a computer simulation of a model of a rate-adaptive packetized network, based on the assumption that users have available to them an embedded-coding type vocoder. Queues are controlled at each link by stripping off lower priority packets of the encoded speech. Three issues addressed in the simulation were: (1) The development of an adequate packet stripping strategy at each node, (2) The development of an end-to-end feedback strategy that would give stable results and yield an overall higher performance than was realized in the absence of feedback, and (3) The integration of the speech packets with data packets. Conclusions are that a judiciously chosen end-to-end feedback strategy can not only improve the efficiency of the system but also alleviate the problem of sudden rate drops due to link overload. The inclusion of data traffic in the model resulted in overall higher link utilization than was realized in the absence of data. (Author)

AD-A065 193/5GA PC **A05**/MF **A01**
Arizona Univ., Tucson. Dept. of Computer Science.
Reliable Software Through Very High-Level Verification.
Final rept.,
Richard J. Orgass. 10 Oct 78, 82p TR-APLAD15, AFOSR-TR-79-0032
Grant AFOSR-78-3499

Descriptors: *Programming languages, *Computer program verification, Semantics, Computer programs, Computer files, Transfer.
Identifiers: *APL programming language, IBM-370/158 computers.

A semantics of a significant fragment of APL has been constructed and is summarized. This semantics has been used to construct an implementation of the fragment of APL and part of the implementation has been verified. This research program was moved from the Univ. of Arizona to Virginia Polytechnic Inst. and State Univ. As a result of this move, the computing services used for this software have been changed from a DECsystem-10 to an IBM system 370/158. Although there were some difficulties, the software is substantially machine independent. The current state of the software and some of the problems encountered in the move are described. The starting point for the construction of an APL verifier is an incremental assertion synthesizer that was written at the Univ. of Arizona. The next step in the research is to complete the verification of the first part of the APL implementation. When this is completed, the work will branch into two cooperating projects. One of these projects is to complete the semantics and implementation of APL. The other is to derive the rules of inference for the APL primitives that have been defined and to work with the verifier to extend it to a more powerful verifier. After the semantics of APL are completed, the verifier will be further extended.

AD-A065 196/8GA PC **A04**/MF **A01**
McDonnell Douglas Astronautics Co., Huntington Beach, CA.
Metrics of Software Quality,
Annual rept. 1 Jun 77-31 May 78,
Z. Jelinski, and P. B. Moranda. Jul 78, 59p MDC-G7517, AFOSR-TR-79-0128
Contract F49620-77-C-0099

Descriptors: *Test equipment, Test methods, Fortran, Computer program verification.
Identifiers: *Computer software.

This report covers the period from 1 June 1977, to 31 May 1978, during which the first of three phases was completed. This phase concentrated on identifying existing strategies for testing and composing new ones for use in the subsequent phases in which software metrics, related to testing, will be developed and tested against a variety of computer programs. The aim of the research is to produce an automatic testing tool which will exhaustively test all tracks through a program, where a track is a time integrated shadow of the execution sequence - where multiple passes through a program segment are recorded as a single pass and the order of usage of the segments is not relevant.

AD-A065 209/9GA PC **A02**/MF **A01**
Arizona Univ., Tucson. Dept. of Computer Science.
Transferring Files to an IBM Machine.
Technical memo.,
Richard J. Orgass. 28 Jul 78, 8p TM-APLAD14, AFOSR-TR-79-0127
Grant AFOSR-78-3499

Descriptors: *Computer files, Transfer, Computer programs, Computers, Data transmission systems.
Identifiers: IBM computers.

Directions for using a sequence of programs to write EBCDIC or ASCII files that can be read by IBM machines and other computers is described. The programs have been used to transfer files to an IBM machine and to a HP-2000. (Author)

AD-A065 240/4GA PC **A02**/MF **A01**
California Univ., Berkeley.
Multilevel Random-Access Memory Using One Transistor per Cell,
Raymond A. Heald, and David A. Hodges. 23 Sep 78, 11p AFOSR-TR-77-0243
Contract F44620-71-C-0087
Prepared in cooperation with Washington Univ., Seattle. Dept. of Electrical Engineering.
Availability: Pub. in IEEE Jnl. of Solid-State Circuits, vSC-11 n4 p519-528 Aug 76.

Descriptors: *Random access computer storage, *Field effect transistors, Solid state electronics, Circuit analysis, Long life, Fabrication, Reprints.

No abstract available.

AD-A065 265/1GA PC **A11**/MF **A01**
Stanford Univ., CA. Dept of Computer Science.
Parsing Flowcharts and Series-Parallel Graphs.
Technical rept.,
Jacobo Valdes. Nov 78, 235p Rept no. STAN-CS-78-682
Contract N00014-76-C-0688, Grant NSF-MCS75-22870
Doctoral thesis.

Descriptors: *Computer programming, *Parallel processing, *Parsers, Graphs, Flow charting, Algorithms, Networks, Combinatorial analysis, Theses.
Identifiers: *Graph theory.

The main results presented in this work are an algorithm for the recognition of General Series Parallel (GSP) digraphs and an approach to the structural analysis of the control flow graphs of programs. The GSP recognition algorithm determines in O(n+m) steps whether an acyclic digraph with n vertices and m edges is GSP, and if it is, describes its structure in terms of two simple operations on digraphs. The algorithm is based on the relationship between GSP digraphs and the more standard class of TTSP multidigraphs. Our approach to the analysis of flow graphs uses the triconnected components algorithm to find single-entry, single-exit regions. Under certain conditions -- that we identify -- this method will produce structural information suitable for the global flow analysis of control flow graphs in time proportional to the number of vertices and edges of the graph being analyzed. (Author)

AD-A065 284/2GA PC **A02**/MF **A01**
Stanford Univ., CA. Dept. of Computer Science.
Storing a Sparse Table.
Technical rept.,
Robert Endre Tarjan. Nov 78, 25p Rept no. STAN-CS-78-683
Contract N00014-76-C-0688

Descriptors: *Data storage systems, Sparse matrix, Tables(Data), Computer programming, Compilers, Searching.

Two good worst-case methods of storing sparse tables are examined. For the dynamic case, a trie data structure requires O(kn) storage while allowing O(log sub k (N/n)) access time, where k is a parameter whose value is chosen in advance. The method supports table deletions as well as insertions. A more sophisticated method is presented which handles the static case.

AD-A065 328/7GA PC **A06**/MF **A01**
Maryland Univ., College Park. Computer Science Center.
Memory-Augmented Cellular Automata for Image Analysis.
Interim rept.,
Charles R. Dyer. Nov 78, 118p CSC-TR-710, AFOSR-TR-79-0126
Grant AFOSR-77-3271

Descriptors: *Image processing, *Automata, Pattern recognition, Graphs, Memory devices, Input, Machine coding.
Identifiers: *Cellular automata, Turing machines.

This paper generalizes cellular automata by allowing the memory size associated with each cell to be a function of the input size. In particular, we define a cellular analog to the tape-bounded Turing machine for bounded cellular, pyramid cellular, and parallel/sequential automata. We focus on the case in which each cell has memory size proportional to the logarithm of the input size, showing the increased capabilities of these machines for executing a variety of basic image analysis and recognition tasks. (Author)

AD-A065 352/7GA PC **A03**/MF **A01**
Defense Communications Engineering Center, Reston, VA.
SOL-370 Language Reference Manual.
Technical note,
Horst Ulfers. Sep 78, 35p DCEC-TN-11-78, AD-E100 172
Supersedes Rept. No. DCEC-TN-25-75 dated Dec 75, AD-A025 927.

Descriptors: *Simulation languages, Communications networks, Computerized simulation, Instruction manuals, User needs, Message processing, Algorithms, Syntax, Programming languages.
Identifiers: SOL-370 programming language, IBM-370 computers, Mathematical models.

This document describes the SOL-370 algorithmic language, which is used to construct general systems models for simulation. After the language syntax is described, several sample models are given.

AD-A065 353/5GA PC **A03**/MF **A01**
Defense Communications Engineering Center, Reston, VA.
SOL-370 User's Guide.
Technical note,
Horst Ulfers. Aug 78, 33p DCEC-TN-10-78, AD-E100 171

Descriptors: *Simulation languages, Communications networks, Computerized simulation, Error detection codes, Programming languages, Instruction manuals, User needs.
Identifiers: SOL-370 programming language, User manuals.

This technical note provides information for the user of SOL-370 to install and execute the SOL-370 System, and how to use the error tracing facilities. (Author)

AD-A065 405/3GA PC **A03**/MF **A01**
General Research Corp., Santa Barbara, CA.
FORTRAN Automated Verification System (FAVS). Volume I.
Final technical rept. Oct 76-Feb 78,
Rich A. Melton, and Dorothy M. Andrews. Jan 79, 50p RADC-TR-78-268-VOL-1
Contract F30602-76-C-0436
See also Volume 3, AD-A065 406.

Descriptors: *Computer program verification, Computer programs, Fortran, Automation, Computer program documentation, Compilers, Error detection codes, Flow charting.
Identifiers: MULTICS system, CDC-6400 computers, JOVIAL programming language, FAVS system, DMATRAN programming language.

The FORTRAN Automated Verification System (FAVS) is intended to reduce the cost of assuring that software systems written in FORTRAN are comprehensively tested. It consists of automated algorithms and techniques for verifying the testing of FORTRAN software. FAVS supports testable programming in FORTRAN, augments the static error detection performed by FORTRAN compilers, automates the measurement of testing effectiveness, assists the manual design and selection of test cases, and increases the mechanization of certain aspects of software system maintenance. FAVS is a series of tools which provide translation from DMATRAN (a structured extension of FORTRAN) to FORTRAN and from FORTRAN to DMATRAN, static detection of unreachable statements, set/use errors, mode-conversion errors, and external reference errors, a means of measuring the effectiveness of test cases, assistance in the construction of test data that will thoroughly exercise the software, and automated documentation.

AD-A065 406/1GA PC **A03**/MF **A01**
General Research Corp., Santa Barbara, CA.
FORTRAN Automated Verification System (FAVS). Volume III. DMATRAN User's Guide.
Final technical rept. Oct 76-Jan 78,
Rich A. Melton, and Dorothy M. Andrews. Jan 79, 46p RADC-TR-78-268-VOL-3
Contract F30602-76-C-0436
See also Volume 1, AD-A065 405.

Descriptors: *Computer program verification, *Computer programs, *Programming manuals,

Fortran, Automation, Computer program documentation, Computer logic, Compilers, Machine coding, Syntax, Flow charting.
Identifiers: DMATRAN programming language, FAVS system.

DMATRAN is a structured programming language which provides the logical constructs that are necessary to write structured code in FORTRAN. The additional control constructs in DMATRAN are a structured IF construct which allows execution of a group of statements, two basic structures which permit iteration while a logical expression is true (DO WHILE...END WHILE) or until a logical expression becomes true (DO UNTIL...END UNTIL), and a noniterative CASE structure which begins with an integer expression which is evaluated and then compared with integers in a list of CASE statements that follow. Execution of a group of statements following the matching CASE statement is then initiated. The DMATRAN language also contains an INVOKE...BLOCK... END BLOCK construct which provides a form of internal subroutine capability as well as a way to reduce overhead costs by eliminating duplicate sections of code. This DMATRAN User's Guide describes and illustrates each structured construct. It also explains how to use the DMATRAN precompiler which translates DMATRAN into compilable FORTRAN code. The DMATRAN precompiler provides additional source text editing and display features including page ejection, suppressing source listing, and changing the syntax of DMATRAN statements; the DMATRAN commands for these capabilities are also described.

AD-A065 420/2GA PC **A02**/MF **A01**
Georgia Inst. of Tech., Atlanta. School of Information and Computer Science.
Conference on Foundations of Secure Computation Held at Atlanta, Georgia, on October 3-5, 1977.
Final rept.,
Richard A. DeMillo. 1 Dec 78, 7p
Grant N00014-77-G-0030

Descriptors: *Data processing security, Symposia, Data bases, Trade off analyses, Cryptography, Secure communications.
Identifiers: Meetings.

A collection of new research contributions from the major researchers in computer security should be influential as a textbook and as a reference work in the area. The meeting exceeded any expectations in the areas cited in the proposal, and provided a number of unexpected dividends.

AD-A065 429/3GA PC **A02**/MF **A01**
Army Missile Research and Development Command, Redstone Arsenal, AL. Technology Lab.
A Simple 16-Bit Microcomputer Utilizing the 9900 CPU.
Technical rept.,
Michael C. Pitruzzello, and Robert S. Sparks. 8 Dec 78, 23p Rept no. DRDMI-T-79-4

Descriptors: *Microcomputers, *Fire control computers, Guided missiles, Rockets, Guidance, Optical tracking, Correlation techniques, Onboard, Low costs, High rate, Throughput, Reliability(Electronics).

The development of the large scale integrated circuit and its application in computers has resulted in a virtual explosion in data processing capabilities. These capabilities are being integrated into many existing and planned missile systems to provide increased accuracy, reliability, and maintainability at low cost. This report presents the design of a one board computer based on the 16-bit TMS 9900 CPU chip. Emphasis is placed on the simplicity, low cost, small size, and relatively high throughput rate of the computer. (Author)

AD-A065 442/6GA PC **A02**/MF **A01**
Stanford Univ., CA. Stanford Electronics Labs.
Distributed Data Processing for BMD.
Final rept. 11 Jan 78-23 Jan 79,
Michael J. Flynn. Feb 79, 18p
Contract DASG60-77-C-0073

Descriptors: *Data processing, Computer architecture, Distribution, Nodes, High level languages, Communications networks, Parallel processors, Antimissile defense systems.
Identifiers: *Distributed processing.

During the past year, the emphasis of this group in support of Distributed Data Processing for BMD was on the development of tools for more accurately predicting the performance of distributed data processing systems and investigation alternatives for novel DDP architectures. Specifically three study areas were covered: (1) Directly Executed Languages and 'Ideal' BMD Architecture Development; (2) Parallel Nodal Architectures; and (3) Communication Networks.

AD-A065 447/5GA PC **A07**/MF **A01**
General Research Corp., Santa Barbara, CA.
FORTRAN Automated Verification System (FAVS). Volume II. User's Manual.
Final technical rept. Oct 76-Aug 78,
Dorothy M. Andrews, and Rich A. Melton. Jan 79, 142p RADC-TR-78-268-VOL-2
Contract F30602-76-C-0436
See also Volume 3, AD-A065 406.

Descriptors: *Computer program verification, Computer programs, Error detection codes, Automatic, Fortran, Programming manuals, Computer program documentation, Test methods, Syntax, Computer logic.
Identifiers: MULTICS system, Univac-1100 computers, DMATRAN programming language, Translator routines, FAVS system, Computer software.

FAVS, for FORTRAN Automated Verification System, is a tool for analyzing source programs written in FORTRAN or DMATRAN. It is essentially a software system to be used as an aid in improving, documenting, and validating the quality of software and software testing by providing for: syntax and structural analysis of the user's source program, static analysis to detect inconsistencies in program structure or in the use of variables, automated documentation, instrumentation of the source code, analysis of testing coverage, and retesting guidance. A separate function that FAVS can perform is the transformation of an unstructured FORTRAN program into a logically equivalent DMATRAN program. This manual describes how to use FAVS from the beginning of the software development cycle to its completion.

AD-A065 452/5GA PC **A03**/MF **A01**
Naval Ocean Systems Center, San Diego, CA.
New Methodologies for Automated Data Fusion Processing.
Interim rept. 1 Jun 77-30 Sep 78,
Robin A. Dillard. Sep 78, 40p Rept no. NOSC/TR-364

Descriptors: *Data processing, Natural language, Automation, Pattern recognition, Integrated systems, Artificial intelligence.
Identifiers: *Data fusion, Data frames, Production.

This report initiates investigations into some of the newer technologies to determine if they have useful applications to the problem of automating the fusion of multisource data. The main technology areas discussed are natural language processing (NLP), production rules, and pattern recognition. The theory of possibilities is also considered. An integrated data fusion system is postulated which would employ a number of different, interacting techniques. Early stages of system processing would require NLP techniques to restructure narrative data into a form useful for automated fusion with other kinds of data. The use of 'frames' as knowledge representation structures is considered for this part of the processing. Techniques involved in later processing could include production rules and pattern recognition. Possible applications of these two techniques to data fusion problems are discussed. (Author)

AD-A065 480/6GA PC **A08**/MF **A01**
Ung (Man T.) El Segundo, CA.
Space Shuttle Digital Computer Simulation Benchmark.
Final rept.,
Man T. Ung. Dec 78, 172p AFFTC-TR-78-30
Contract F04700-78-M-2539

Descriptors: *Flight testing, *Space shuttles, Computerized simulation, Acceptance tests, Flight simulation, Computer program verification, Specifications, Flight control systems, Digital systems, Equations of motion, Fortran, Computer programs, Flow Charting.

This report was produced to serve as the benchmark to be used during the acceptance test for the Simulator for Flight Test and Development (SAFTD) at Edwards AFB. Afterwards, the document will be used to train new engineers to use the simulator. The writing is tutorial in nature and it stresses the orderly organization of a computer flight simulation. Model validation is explained in terms of static and dynamic checks. The report is not intended to arrive at any operational conclusion or new discoveries. This Space Shuttle Simulation, which is aimed at training and contractual acceptance of procured hardware, is different from the AFFTC Office of Advanced Manned Vehicles' Space Shuttle Simulation, which is used to support Shuttle development and flight testing. (Author)

E79-10162 PC **A07**/MF **A01**
Purdue Univ., Lafayette, IN. Lab. for Applications of Remote Sensing.
Multispectral Scanner System Parameter Study and Analysis Software System Description. Volume II.
Final rept. 1 Dec 77-30 Nov 78,
D. A. Landgrebe, B. G. Mobasseri, D. J. Wiersma, E. R. Wiswell, and CD. McGillem. Nov 78, 133p LARS-CR-112678-VOL-2, NASA-CR-160113
Contract NAS9-15466

Descriptors: *Multispectral band scanners, Skylab program, EREP, Classifications, Accuracy, Algorithms, Information retrieval.
Identifiers: Computer programming.

The author has identified the following significant results. The integration of the available methods provided the analyst with the unified scanner analysis package (USAP), the flexibility and versatility of which was superior to many previous integrated techniques. The USAP consisted of three main subsystems: (1) a spatial path, (2) a spectral path, and (3) a set of analytic classification accuracy estimators which evaluated the system performance. The spatial path consisted of satellite and/or aircraft data, data spatial correlation analyzer, scanner IFOV, and random noise model. The output of the spatial path was fed into the analytic classification and accuracy predictor. The spectral path consisted of laboratory and/or field spectral data, EXOSYS data retrieval, optimum spectral function calculation, data transformation, and statistics calculation. The output of the spectral path was fed into the stratified posterior performance estimator.

N79-19700/0GA PC **A03**/MF **A01**
Michigan Univ., Ann Arbor.
Performability Evaluation of the SIFT Computer.
J. F. Meyer, D. G. Furchtgott, and L. T. Wu. Jan 79, 40p NASA-CR-158249, SEL-127
Grant NSG-1306

Descriptors: Computation, Mathematical models, Performance tests, Air transportation, Algorithms, Random variables, Stochastic processes.
Identifiers: *Computer performance evaluation, *Airborne computers, SIFT computers.

For abstract, see STAR 1710

N79-19701/8GA PC **A02**/MF **A01**
Michigan Univ., Ann Arbor. Systems Engineering Lab.
Models and Techniques for Evaluating the Effectiveness of Aircraft Computing Systems.
Semiannual Status Report, 1 Jun. - 30 Nov. 1978.
J. F. Meyer. Jan 79, 12p NASA-CR-158247, SEL-129
Grant NSG-1306

Descriptors: *Commercial aircraft, Mathematical models, System effectiveness, Computer techniques, Computerized simulation, Performance prediction, Quantitative analysis, Reliability analysis.
Identifiers: *Airborne computers Computer performance evaluation.

For abstract, see STAR 1710

N79-19734/9GA PC **A12**/MF **A01**
Michigan Univ., Ann Arbor. Dept. of Electrical and Computer Engineering.
METAPHOR: Programmer's Guide, Version 1.
D. G. Furchtgott. Jan 79, 256p NASA-CR-158251, SASR-5
Grant NSG-1306

Descriptors: *Mathematical models, User manuals(Computer programs), Automatic control, Computer programming, Performance prediction, Programming languages, Systems engineering, Tools.
Identifiers: *Programming manuals, METAPHOR system, Performance evaluation.

For abstract, see STAR 1710

PATENT-4 141 076 Not available NTIS
Department of the Air Force Washington DC
Associative Bubble Memory Apparatus.
Patent,
Rex A. Naden. Filed 24 Jun 77, patented 20 Feb 79, 7p AD-D005 822/2, PAT-APPL-809 729
Supersedes PAT-APPL-809 729-77, AD-D004 142.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $0.50.

Descriptors: *Patents, *Bubble memories, Memory devices, Real time, Surveillance, Military satellites, Data processing.
Identifiers: PAT-CL-364-714, *Associative storage.

An associative bubble memory apparatus uses a plurality of registers to provide a high total memory capacity and to provide data retrieval or correlation based upon content rather than the address of the data of interest.

9C. Electrical and Electronic Engineering

AD-A064 904/6GA PC **A03**/MF **A01**
National Aviation Facilities Experimental Center, Atlantic City, NJ.
Earth Ground System Design and Evaluation.
Final rept. Oct 75-Jan 78,
John D. Riley. Jan 79, 46p FAA-NA-78-50, FAA-RD-78-156

Descriptors: Telluric currents, Electrical conductivity, Soils, Electrical impedance, Cost analysis, Rods, Field tests, Electrical resistance, Soil classification.
Identifiers: Soil resistivity, K2-10 ground rods, *Electrical grounding, Systems engineering.

Model K2-10 ground rods were installed, tested, and evaluated with copper-clad steel (CCS) and CCS salt-enhanced (CCSS) rods at field sites and the National Aviation Facilities Experimental Center (NAFEC) for comparison and determination if they meet the manufacturer's specifications in high-, medium-, and low-resistivity soils under arid and wet conditions through a year of seasonal change. It was determined at most sites that the XIT-rod-to-earth impedance remained lower than the CCS and CCSS rods under the above conditions, although seasonal impedance variations did exist. XIT rod earth impedance remained well above 4 ohms at most sites. XIT rod installation costs were greater, and unit costs were much greater than CCS and CCSS rods. The engineering approach used herein may be a useful guide for engineering ground systems at field facilities. (Author)

AD-A065 148/9GA PC **A02**/MF **A01**
Defence Research Establishment, Ottawa (Ontario).
Some Defence Applications of Superconductors,
Arthur W. Johnson. Mar 78, 25p Rept no. DREO-R-778
Abstract in French.

Descriptors: *Superconductors, *Josephson junctions, *Electric generators, *Electric motors, *Electromagnets, Magnetometers, Gradiometers, Magnetic fields, Critical temperature, Solenoids, Weight, Volume, Efficiency, Voltmeters, Tunneling, Military applications.
Identifiers: Type II superconductors, Thermal noise, High currents, High fields, Canada.

Two basic applications of superconductivity are described. The first involves the use of Type II superconductors in magnets, motors and generators to improve efficiency and reduce weight and volume. The second relates to the use of superconducting junctions in magnetometers and gradiometers to provide instruments with very high sensitivity. Possible defence use of superconducting materials in these areas is outlined. A brief review of superconductors and their properties is also given. (Author)

9D. Information Theory

AD-A065 363/4GA PC **A02**/MF **A01**
Naval Weapons Center, China Lake, CA.
Proposed Complex and Binary Sequences which Achieve Welch Bound.
Technical memo. Jul 75-May 76,
W. O. Alltop, and F. G. Freyne. Jun 76, 16p NWC-TM-2790, GIDEP-E095-1520

Descriptors: *Crosstalk, *Communications networks, *Sequences(Mathematics), Coding, Binary notation, Cross correlation, Coefficients, Algorithms, Matrices(Mathematics).
Identifiers: Pulse communication.

Families of periodic sequences with small sidelobes and low cross-talk (cross-correlations) are needed in many digital communication systems. L. R. Welch has recently established a lower bound for the largest of the side-lobes and cross-correlation coefficient associated with a family of M distinct sequences of period L. In particular, for two sequences there must occur a coefficient greater than sq. rt. (1/2L). As the number M of sequences increases to approximately sq. rt. (l/L), this lower bound increases to sq. rt. (1/L). In this report several sets of periodic sequences utilizing complex, ternary, and binary coded signal bits are constructed which nearly meet Welch's bound for M approximately equal to sq. rt. (1/L). In this paper's context, ternary coding refers to three distinct phase signals, while complex coding refers to phase levels relating to the nth complex roots of unity. Most of these sequences contain only sq. rt. L non-zero entries. However, one type of family consits of M = 2 to the m power binary (+ or - 1) sequences of period L = 2 to the m power - 1. The maximum coefficient for this family is approximately one-half as large as the corresponding maximum for the Gold sequences of the same period. This represents a considerable improvement over the Gold codes for such codes requiring an even number of shift register stages for generation. (Author)

AD-A065 440/0GA PC **A02**/MF **A01**
Texas Univ. at Austin. Electronics Research Center.
Stability Results for a Class of Systems with Multiplicative State Noise.
Interim rept.,
Gary L. Wise, and Steven I. Marcus. 1977, 10p AFOSR-TR-79-0152
Contract F49620-77-C-0101, Grant NSF-ENG76-11106
Presented at the Annual Allerton Conference on Communication, Control, and Computing (15th), 28-30 Sep 77.

Descriptors: *Mathematical filters, *Noise analyzers, Poisson density functions, Lie groups, Stochastic processes.
Identifiers: Stability.

No abstract available.

9E. Subsystems

AD-A064 945/9GA PC **A04**/MF **A01**
National Aviation Facilities Experimental Center, Atlantic City, NJ.
Evaluation of Cathode-Ray Tube Protection and Antireflective Surfaces for the Plan View Display.
Final rept. Oct 73-Jun 78,
Robert H. Mitchell, and John W. Aschenbach. Jan 79, 70p FAA-NA-78-37, FAA-RD-78-130

Descriptors: *Cathode ray tubes, *Cathode ray tube screens, *Display systems, *Air traffic control systems, *Safety, Implosions, Protection, Antireflection coatings, Laminates, Lightning, Radar images, Plan position indicators.

The purpose of this report is to describe the evaluation of implosion protection systems and antireflective surfaces for cathode-ray tube (CRT) used in plan view displays (PVD's) for air traffic control (ATC). An implosion forcing device was fabricated utilizing coolant spray and a carbide-tipped punch to impact the critical CRT shoulder area to induce implosions. Results showed that none of the six CRT's tested utilizing the Kimcode -type implosion system could be imploded violently. Ten other CRT's were evaluated for antireflectivity and optimum resolution. Various antireflective surfaces were tried. Subjective analysis indicated that an etched surface was sufficient to reduce reflections for ATC use. The combination of etch and High Efficiency Antireflective (HEA) coating was judged most antireflective, but fingerprints on the HEA-coated surface could be seen. (Author)

AD-A064 966/5GA PC **A07**/MF **A01**
Honeywell, Inc., Minneapolis, MN. Systems and Research Center.
Fiber Optics Receiver Integrated Circuit Development.
Final rept. Jun 76-Jul 78,
Ben R. Elmer. Dec 78, 138p 76-SRC/69, AFAL-TR-78-185
Contract F33615-76-C-1275

Descriptors: *Receivers, *Fiber optics, *Integrated circuits, Optical circuits, Performance(Engineering), Packaging, Limitations, Specifications, Data links, Data rate, Transistor transistor logic, Circuit analysis, Sensitivity, Bandwidth.
Identifiers: Design.

This report describes the development of the Fiber Optic Receiver Integrated Circuit(FORIC) from synthesis through analysis, layout, processing, packaging, and testing the 1050 parts that were delivered. Detailed test, burn-in, and qualification plans are also included. One of the highlights of this report is an Application Information section, written to inform users of the characteristics of the device that are not apparent from reading the specification. (Author)

AD-A065 124/0GA PC **A02**/MF **A01**
Ohio State Univ., Columbus Electroscience Lab.
Considerations for Efficient Wire/Surface Modeling.
Technical rept. 1 Jul-31 Dec 78,
E. H. Newman, and D. M. Pozar. Dec 78, 19p ESL-(78)4569-7, ARO-14012.4-EL
Grant DAAG29-76-G-0331

Descriptors: *Dipole antennas, *Electric wire, *Flat plate models, Method of moments, Computerized simulation, Composite structures, Alternating current, Electrical impedance, Frequency response, Numerical analysis, Junctions, Surfaces, Dipoles.
Identifiers: Electric dipoles, Current densities, Convergence.

The most significant aspects of a moment method surface patch/wire formulation are speed, accuracy, convergence, and versatility. Techniques for improving these parameters are discussed and applied to a solution based on the piecewise sinusoidal reaction formulation. (Author)

AD-A065 130/7GA PC **A03**/MF **A01**
Ohio State Univ., Columbus Electroscience Lab.
Electrically Small Antenna Studies.
Final rept. 15 Oct 75-14 Oct 78,
E. H. Newman, and C. H. Walter. Jan 79, 43p ESL-4311-9, ESL-784 311, ARO-13331.5-EL
Grant DAAG29-76-G-0067

Descriptors: *Loop antennas, *Dipole antennas, *Electric wire, *Ferrites, *Dielectrics, Method of

moments, Electromagnetic radiation, Scattering, Grids, Homogeneity, Thinness.
Identifiers: Surface currents, Electrically small antennas, Loading(Electronics).

This report summarizes the work on U. S. Army Research Office Grant No. DAAG29-76-C-0067 from 15 October 1975 to 14 October 1978. Three areas related to small antennas were investigated: wires in the presence of dielectrical ferrites, closely spaced thin wires, and small antenna location synthesis. Each of these areas resulted in a journal publication, which are included in the Appendixes. (Author)

AD-A065 135/6GA PC **A03**/MF **A01**
Rhode Island Univ., Kingston. Dept. of Electrical Engineering.
Synthesis of Digital Filter Structures with Low Roundoff Noise and Coefficient Sensitivity.
Final rept. 1 Jun 76-30 Nov 78,
Leland B. Jackson, Allen G. Lindgren, and Young Kim. 15 Dec 78, 30p AFOSR-TR-79-0036
Grant AFOSR-76-3057

Descriptors: *Digital filters, Networks, Low noise, Optimization, Mathematical analysis, Eigenvalues, Matrices(Mathematics), Reports.
Identifiers: Synthesis.

Optimal synthesis procedures for second-order state-space digital filters have been developed in the sense of minimum output roundoff noise with L2 scaling. It has been demonstrated that these procedures are also nearly optimal for L at infinity scaling. The coefficient sensitivities have been shown to be closely related to the roundoff-noise components, and hence the optimal designs also have low sensitivity properties. The limit-cycle behavior of state-space structures has been investigated for rounding and for magnitude truncation. It was shown that rounding often leads to large antonomous limit cycles; while with magnitude truncation, it is possible to avoid limit cycles altogether. These results are presented in the two papers attached to this report. (Author)

AD-A065 140/6GA PC **A04**/MF **A01**
Naval Ocean Systems Center, San Diego, CA.
Linear Predictive Digital Filtering of Narrowband Processes in Additive Broadband Noise.
Final rept. for FY 78,
E. H. Satorius, J. R. Zeidler, and S. T. Alexander. 1 Nov 78, 57p Rept no. NOSC/TR-331

Descriptors: *Adaptive filters, *Speech analysis, *Noise reduction, Linear filtering, Power spectra, Estimates, Circuit analysis, Signal processing, Narrowband.
Identifiers: Wiener filters, Linear predictive coding.

Linear prediction filters (LPF) have recently found a large number of applications in such areas as speech analysis and power spectral estimation. An important application of these filters is to aid the cancellation or additive broadband noise from narrowband signal components. Provided the signal bandwidth is significantly less than the noise bandwidth, the LPF may be used to suppress the additive noise without requiring an external reference noise input (as is required in many noise cancelling applications). The purpose of this report is to provide an analytical basis for bounding the performance of a digital LPF when applied to the problem of cancelling broadband additive noise from narrowband signals. Experimental results obtained with a hardware implementation of an adaptive Wiener filter are shown to verify the analytical results. (Author)

AD-A065 178/6GA MF **A01**
Syracuse Univ., NY.
Computer Program Maintenance Manual for the Antenna Pattern Distortion Computer Program. Version IV.
Phase rept.,
J. Perini, S. Wang, and K. Hirasawa. Jan 79, 158p RADC-TR-78-264
Contract F30602-75-C-0121
See also AD-A038 142.
Availabilty: Microfiche copies only.

Descriptors: *Antenna radiation patterns, *Computer programs, *Programming manuals, Electromagnetic fields, Distortion, Coupling(Interaction), Antennas, Electromagnetic compatibility, Communication equipment, Geometry, Parameters, Flow charting, Input output devices.
Identifiers: Mutual coupling, DISTORT computer program.

This report describes in reasonable detail the Antenna Pattern Distortion Computer (DISTORT) so that any software maintenance or modification can be carried out without much difficulty. A description of every subsystem, program and subroutine as well as all the file requirements is given and is accompanied by detailed flow charts. (Author)

AD-A065 287/5GA PC **A04**/MF **A01**
Massachusetts Inst. of Tech., Lexington. Lincoln Lab.
Configuration Tradeoffs for Satellite Nulling Arrays.
Technical note,
Michael L. Burrows, and Joseph T. Mayhan. 21 Nov 78, 66p TN-1978-5, ESD-TR-78-288
Contract F19628-78-C-0002

Descriptors: *Antenna arrays, *Satellite antennas, *Communication satellites, *Multiple beam antennas, Adaptive systems, Synchronous satellites, Radiofrequency interference, Suppressors, Area coverage, Trade off analyses, Vulnerability, Resolution, Algorithms.
Identifiers: Null steering, Thinned arrays, Satellite communications, Uplinks, Satellite communications, Grating lobes.

This paper reviews many of the factors to be considered in deciding upon the relative locations of the elements of an adaptive nulling uplink array antenna on a communications satellite. Discussed are the implications of the limited field of view, the desired resolution, the required coverage away from the null, the weight of the array and its ease of deployment and the resistance to grouped interference sources. Filled arrays, having a performance essentially identical to that of a multiple beam antenna, are described, followed by thinned arrays with their increased resolution but greater vulnerability to grouped interference sources, and hybrid arrays which combine the two array types in an attempt to reduce this vulnerability. (Author)

AD-A065 302/2GA PC **A02**/MF **A01**
Office of Naval Research, London (England).
Flat Panel Display Technology in Europe,
D. C. Rummler, J. Silva, A. Nedoluha, and H. Whitted. 8 Dec 78, 14p Rept no. ONRL-R-11-78

Descriptors: *Display systems, Data displays, Command and control systems, Matrix displays, Alphanumeric displays, Cathode ray tubes, Cost analysis, Technology forecasting, Europe, Great Britain.
Identifiers: Flat Panel Displays.

This report is the result of a survey of Flat Panel Display technologies in early 1978. Countries visited included the United Kingdom, France and West Germany. Selected industrial and governmental research establishments were surveyed for developments in emissive (gas discharge, light emitting diode, electroluminescence) and subtractive (liquid crystal; electrophoretic, electrochromics) display technologies. Significant new applications of these flat panel technologies are also identified. (Author)

AD-A065 303/0GA PC **A04**/MF **A01**
Rockwell International, Anaheim, CA. Electronics Research Center.
Bismuth Germanium Oxide (BGO) Surface Acoustic Wave (SAW) Convolver Device.
Final rept. 15 Jul 77-31 Oct 78,
L. R. Adkins. 16 Feb 79, 67p Rept no. C79-118/501
Contract DASG60-77-C-0115

Descriptors: *Signal processing, Surface waves, Acoustic waves, Piezoelectric transducers, Bismuth oxides, Germanium compounds, Spread spectrum, Nonlinear systems, Coupling(Interaction), Air, Bandwidth.
Identifiers: *Convolvers, SAW convolvers, Metallization, Germanium oxides, Air gaps, *SAW devices.

This report describes the design and evaluation of strip-coupled convolvers (SCCs) with large time-bandwidth products. A multichannel concept was developed for this project in order to reduce the deleterious effects and fabrication complexities due to extensive metallization in the acoustic propagation paths (an inevitable consequence of SCCs with long interaction times). With this approach the interaction region is divided among N separate convolver channels, each covering 1/Nth of the total interaction region, and the respective outputs are summed. Using this technique, SCCs with equivalent time-bandwidth products in excess of 1000 have been demonstrated. Further, with the best device, the nonlinear coupling coefficient M was found to be of the theoretical order of magnitude, and to have internal conversion efficiencies an order of magnitude better than corresponding air-gap convolvers (AGCs). The results of these investigations led to the conclusion that, with optimum efficiency in the input and output circuits, large time-bandwidth (2000-5000) SCCs, with efficiencies up to 20 dB greater than currently available modes, are a real possibility. These higher efficiencies, together with relatively simple fabrication procedures, make the multichannel SCC an attractive device for further development. (Author)

AD-A065 320/4GA PC **A04**/MF **A01**
Massachusetts Inst. of Tech., Lexington. Lincoln Lab.
Computer Programs for the Effect of Plasma on a One-Dimensional Slot Antenna in Canonical Geometries.
Technical rept.,
Paul E. Bisbing. Sep 78, 65p ESD-TR-78-365
Contracts F19628-78-C-0002, DASG60-78-C-0126
Prepared in cooperation with General Electric Co. Re-Entry and Environmental Systems Div., Rept. no. 78SDR014.

Descriptors: *Slot antennas, *Electromagnetic interference, *Plasmas(Physics), Computations, Computer programs, Electron density, Variations, Antenna radiation patterns, Electrical impedance, Noise(Electrical and Electromagnetic), Input output models.

This report documents a set of computer programs for plasma effects on one-dimensional slot antennas in planar, cylindrical and spherical surfaces. The plasma in each case is assumed to have electron density variation only in the normal direction. The programs calculate radiation pattern, input impedance and noise temperature as generated by the plasma. Various generalizations, which can be calculated by minor changes to the programs, are described. (Author)

AD-A065 506/8GA PC **A02**/MF **A01**
Massachusetts Inst. of Tech., Cambridge. Research Lab. of Electronics.
Electrostatically Controlled Wire-Mesh Antenna,
Jeffrey H. Lang, John R. Gersh, and David H. Staelin. 23 Aug 78, 3p
Contract DAAG29-78-C-0200
Availability: Pub. in Electronics Letters, v14 n20 p665-666, 28 Sep 78.

Descriptors: *Satellite antennas, *Parabolic antennas, Reflectors, Focusing, Reprints.
Identifiers: Mesh antennas, Electrostatic focusing.

No abstract available.

NTIS/PS-79/0389/1GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Beam Lead Microelectronics (Citations from the NTIS Data Base).
Rept. for 1964-Mar 79,
William E. Reed. May 79, 88p*
Supersedes NTIS/PS-78/0368, NTIS/PS-77/0361, NTIS/PS-76/348, and NTIS/PS-75/246. For the companion Published Search of the Engineering Index Data Base, see NTIS/PS-79/0390.

Descriptors: *Circuit interconnections, *Bibliographies, Semiconductor devices, Integrated circuits, Microelectronics, Bonding, Packaging, Fabrication, Abstracts.

Identifiers: *Beam leads, *Beam lead technology, *Beam lead devices.

The technology and application of beam lead devices are treated in these Federally-sponsored research reports. Topics include design, fabrication, bonding, packaging, testing, and radiation hardening. (This updated bibliography contains 81 abstracts, 3 of which are new entries to the previous edition.)

NTIS/PS-79/0390/9GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Beam Lead Microelectronics (Citations from the Engineering Index Data Base).
Rept. for 1970-Mar 79,
William E. Reed. May 79, 141p*
Supersedes NTIS/PS-78/0369, NTIS/PS-77/0362, and NTIS/PS-76/0349. For the companion Published Search of the NTIS Data Base, see NTIS/PS-79/0389.

Descriptors: *Circuit interconnections, *Bibliographies, Semiconductor devices, Integrated circuits, Microelectronics, Bonding, Packaging, Fabrication, Abstracts.
Identifiers: *Beam leads, *Beam lead technology, *Beam lead devices.

Research reports from worldwide literature are cited which treat with the technology and applications of beam lead devices. Topics include chip interconnections, design, fabrication, bonding, packaging, and testing. (This updated bibliography contains 135 abstracts, 17 of which are new entries to the previous edition.)

NTIS/PS-79/0411/3GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Phased Arrays. Volume 3. March, 1976-March, 1979 (Citations from the NTIS Data Base).
Rept. for Mar 76-79,
William E. Reed. May 79, 209p*
Supersedes NTIS/PS-78/0331, NTIS/PS-77/0309, NTIS/PS-76/0308, and NTIS/PS-75/338. For the companion Published Searches of the Engineering Index Data Base, see NTIS/PS-79/0412 and NTIS/PS-79/0413. See also Volume 1, 1967-1971, NTIS/PS-75/337 and Volume 2, 1972-February, 1976, NTIS/PS-77/0308.

Descriptors: *Bibliographies, *Phased arrays, Design, Antenna radiation patterns, Scanning, Steerable antennas, Radar antennas, Phase shift circuits, Abstracts.

The design, performance, radiation patterns, and applications of phased arrays are presented in these Federally-sponsored research reports. Applications include communications, radar, optical, spacecraft, and navigational aids. (This updated bibliography contains 200 abstracts, 60 of which are new entries to the previous edition.)

NTIS/PS-79/0412/1GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Phased Arrays. Volume 1. 1974-1977 (Citations from the Engineering Index Data Base).
Rept. for 1974-77,
William E. Reed. May 79, 248p*
For the companion Published Searches of the NTIS Data Base, see NTIS/PS-75/337, NTIS/PS-77/0308, and NTIS/PS-79/0411.

Descriptors: *Bibliographies, *Phased arrays, Design, Antenna radiation patterns, Scanning, Radar antennas, Phase shift circuits, Abstracts.

The bibliography cites reports from worldwide research on the design, performance, radiation patterns, and applications of phased arrays. Applications include radar, communications, optical, electronic countermeasures, acoustic, aircraft, and spacecraft. (This updated bibliography contains 241 abstracts, none of which are new entries to the previous edition.)

NTIS/PS-79/0413/9GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Phased Arrays. Volume 2. 1978-March, 1979 (Citations from the Engineering Index Data Base).
Rept. for 1978-Mar 79,
William E. Reed. May 79, 91p*
Supersedes NTIS/PS-78/0332, NTIS/PS-77/0310, and NTIS/PS-76/0309. For the companion Published Searches of the NTIS Data Base, see NTIS/PS-75/337, NTIS/PS-77/0308, and NTIS/PS-79/0411. See also Volume 1, 1974-1977, NTIS/PS-79/0412.

Descriptors: *Bibliographies, *Phased arrays, Design, Antenna radiation patterns, Scanning, Radar antennas, Phase shift circuits, Abstracts.

The bibliography cites reports from worldwide research on the design, performance, radiation patterns, and applications of phased arrays. Applications include radar, communications, optical, electronic countermeasures, acoustic, aircraft, and spacecraft. (This updated bibliography contains 84 abstracts, 82 of which are new entries to the previous edition.)

NTIS/PS-79/0414/7GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Microwave Oscillators. Volume 3. April, 1976-March, 1979 (Citations from the NTIS Data Base).
Rept. for Apr 76-Mar 79,
William E. Reed. May 79, 257p*
Supersedes NTIS/PS-78/0333, NTIS/PS-77/0299, NTIS/PS-76/0312, and NTIS/PS-75/325. For the companion Published Searches of the Engineering Index Data Base, see NTIS/PS-79/0415 and NTIS/PS-79/0416. See also Volume 1, 1964-1971, NTIS/PS-75/324 and Volume 2, 1972-March, 1976, NTIS/PS-77/0298.

Descriptors: *Bibliographies, *Microwave oscillators, Design, Reliability(Electronics), Performance(Engineering), Radiation damage, Gunn diodes, Semiconductor devices, Solid state electronics, Abstracts.
Identifiers: Transferred electron devices, Schottky barrier devices, IMPATT diodes.

Federally-sponsored research reports are cited on the design, development, application, reliability, and radiation effects of microwave oscillators. (This updated bibliography contains 250 abstracts, 21 of which are new entries to the previous edition.)

NTIS/PS-79/0415/4GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Microwave Oscillators. Volume 1. 1975-1977 (Citations from the Engineering Index Data Base).
Rept. for 1975-77,
William E. Reed. May 79, 256p*
For the companion Published Searches of the NTIS Data Base, see NTIS/PS-75/324, NTIS/PS-77/0298, and NTIS/PS-79/0414.

Descriptors: *Bibliographies, *Microwave oscillators, Gunn diodes, Semiconductor devices, Solid state devices, Elastic waves, Design, Utilization, Abstracts.
Identifiers: Acoustic surface waves, SAW devices, Transferred electron devices, IMPATT diodes, TRAPATT devices, Schottky barrier devices.

The bibliography cites reports from worldwide research on the design, performance, properties, and applications of microwave oscillators, including Gunn, IMPATT, transistor, TRAPATT, transferred electron, Schottky, and surface acoustic wave oscillators. (This updated bibliography contains 250 abstracts, none of which are new entries to the previous edition.)

NTIS/PS-79/0416/2GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Microwave Oscillators. Volume 2. 1978-March, 1979 (Citations from the Engineering Index Data Base).
Rept. for 1978-Mar 79,
William E. Reed. May 79, 131p*
Supersedes NTIS/PS-78/0334, NTIS/PS-77/0300, and NTIS/PS-76/0313. For the companion Published Searches of the NTIS Data Base, see NTIS/PS-75/324, NTIS/PS-77/0298, and NTIS/PS-79/0414. See also Volume 1, 1975-1977, NTIS/PS-79/0415.

Descriptors: *Bibliographies, *Microwave oscillators, Gunn diodes, Semiconductor devices, Solid state devices, Elastic waves, Design, Utilization, Abstracts.
Identifiers: Acoustic surface waves, SAW devices, Transferred electron devices, IMPATT diodes, TRAPATT devices, Schottky barrier devices.

The bibliography cites reports from worldwide research on the design, performance, properties, and applications of microwave oscillators, including Gunn, IMPATT, transistor, TRAPATT, transferred electron, Schottky, and surface acoustic wave oscillators. (This updated bibliography contains 126 abstracts, 124 of which are new entries to the previous edition.)

N79-19191/2GA PC **A05**/MF **A01**
TRW Defense and Space Systems Group, Redondo Beach, CA.
Feasibility Study of Graphite Epoxy Antenna for a Microwave Limb Sounder Radiometer (MLSR).
Final Report.
7 Feb 79, 81p NASA-CR-158351, TRW-8710.7.79-3
Contracts NAS7-100, JPL-955258
Subm-Prepared for JPL.

Descriptors: *Antenna design, *Graphite-epoxy composite materials, *Microwave radiometers, Directors(Antenna elements), Limb darkening, Spacecraft antennas.
Identifiers: Graphite reinforced composites, Epoxy matrix composites, Honeycomb laminates.

For abstract, see STAR 1710

PATENT-4 141 014 Not available NTIS
Department of the Air Force Washington DC
Multiband High Frequency Communication Antenna with Adjustable Slot Aperture.
Patent,
Carlyle J. Sletten. Filed 19 Aug 77, patented 20 Feb 79, 5p AD-D005 821/4, PAT-APPL-826 083
Supersedes PAT-APPL-826 083-77, AD-D004 305.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $0.50.

Descriptors: *Patents, *Antennas, *Radio towers, *Slot antennas, High frequency, Portable equipment, Field equipment.
Identifiers: PAT-CL-343-768, *Slot antennas.

This patent relates to a portable multiband H.F. antenna that has minimum ground area requirements and that is capable of transmitting electromagnetic wave radiation with horizontal polarization, azimuth plane omnidirectional patterns and a null in the vertical beam pattern. This is realized by means of an easily erectable tower type radiator. The tower structure has adjacent conductive leg members that define an elongated antenna slot aperture the total length of which is resonant to the lowest operating frequency band. A microwave transmission line resides along one side of the slot and the slot aperture is fed by shorting the transmission line to the opposite side of the slot. Operation at higher frequency bands is achieved by shorting out sections of the slot aperture on both sides of the feed. An array of radiating slot apertures can be provided by shorting the full slot aperture into sections and feeding each slot section separately. The addition of capacitance to the feed circuit permits operation at frequency bands below that provided for by the full slot aperture length.

PB-292 647/5GA PC **A04**/MF **A01**
Office of Radiation Programs, Las Vegas, NV. Electromagnetic Radiation Analysis Branch.
Near-Field Radiation Properties of Simple Linear Antennas with Applications to Radiofrequency Hazards and Broadcasting.
Richard A. Tell. Jun 78, 51p ORP/EAD-78/4

Descriptors: *Dipole antennas, *Monopole antennas, *Electromagnetic fields, Radiation hazards,

Field strength, Radio broadcasting, Television broadcasting, Gain.
Identifiers: Near field.

Analytical expressions for the electromagnetic field have been used to compute electric and magnetic field strengths in the near-vicinity of dipole and monopole transmitting antennas. In particular the fields about a half-wave length dipole are mapped to illustrate the magnitude and wide variation of field intensity which occurs near the feed point, along the axis of the dipole, and about the tip of the radiating arms. These results are analyzed in terms of evaluating potential radiofrequency hazards which may exist extremely near dipole like broadcast antennas and the aspect of close proximity exposure of maintenance personnel is discussed. The field expressions are used to determine the extent of near-field gain compression which occurs at distances close to the antenna and this is compared with measured field intensity data taken for a halfwave dipole using a short, nonperturbing field probe. The results for a single dipole are used to model a vertically stacked array of dipole radiating elements used to simulate a typical FM broadcast transmitting antenna. Expected field intensities are then determined for positions close to such radiating structures to assess the potential of biologically significant fields existing about present day FM broadcast installations. It is found that near-field gain compression can be significant for typically encountered building exposures wherein main beam illumination is possible.

10. ENERGY CONVERSION (NON-PROPULSIVE)

10A. Conversion Techniques

NTISUB/E/148 Subscription
Department of Energy, Oak Ridge, TN. Technical Information Center.
Energy Conservation Update, 1979.
Monthly repts.
1979, 12 issues
Paper copy available on subscription, North American Continent price $27.50/year; all others write for quote. Single copies also available in paper or microfiche.

Descriptors: *Energy conservation, *Bibliographies, Energy consumption, Energy storage, Automotive engineering, Combustion, Rankine cycle, Synthetic fuels, Electric power transmission, Abstracts.

The subject matter covered includes energy conservation technology in buildings, transportation and propulsion, and industry, energy policy, waste processing plants and equipment, energy storage, energy conversion, advanced automotive systems, combustion systems, power cycles, synthetic fuels, and power transmission.

PAT-APPL-841 088/GA PC **A02**/MF **A01**
Department of Energy, Washington, DC.
Solar Collector Cover Plate.
Patent Application,
K Drumheller, and N. R. Gordon. Filed 11 Oct 77, 6p
This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

Descriptors: *Flat plate collectors, Coverings, Design, Honeycomb structures.
Identifiers: ERDA/141000, *Patent applications, Solar collectors.

For abstract, see ERA citation 04:022469.

PATENT-4 114 592
Not available NTIS
Department of Energy, Washington, DC.
Cylindrical Radiant Energy Direction Device with Refractive Medium.
Patent,
R. Winston. Filed 16 Aug 76, patented 19 Sep 78, 10p PAT-APPL-714 863
Supersedes PAT-APPL-714 863-76.
This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC. 20231 $0.50.

Descriptors: *Solar concentrators, Cylindrical configuration, Design, Reflection, Refraction, Solar absorbers.
Identifiers: ERDA/141000, *Patents.

For abstract, see ERA citation 04:022391.

PB-292 816/6GA PC **A03**/MF **A01**
Appropriate Technology Group, Oskaloosa, KS.
Wind Driven Water Pumps. Economics, Technology, Current Activities.
Steve Blake. cDec 78, 29p*
Prepared for International Bank for Reconstruction and Development, Washington, DC.

Descriptors: *Windmills, Pumping, Water, Cost analysis, Well pumps, Technology.
Identifiers: Developing country application, Savonius rotors.

The illustrated handbook discusses the economics and the characteristics typical of the aermotor windmill and the indigenous windmill. Since the use of windmills can have worldwide impact upon the development and upgrading of water supplies, an emphasis is placed upon the importance of supplying this technical information to the developing countries of the world.

PB-293 480/0GA PC **A10**/MF **A01**
Texas Governor's Office of Energy Resources, Austin.
State of Texas Energy Conservation Plan. Volume II. Plan Report.
Jun 77, 203p
Sponsored in part by Federal Energy Administration, Washington, DC.

Descriptors: *Regional planning, *Texas, Residential buildings, Commercial buildings, School buildings, Industrial plants, Agriculture, Thermal efficiency, Illuminating, Social effect, Economic impact, Environmental impacts, Citizen participation, Government procurement, State government, Standards.
Identifiers: *Energy conservation, Residential sector, Transportation sector, Commercial sector, Industrial sector, Agricultural sector, Legal aspects, Energy efficiency, Van pools, Car pools, Car pooling, Right turn on red.

Topic areas cover: Thermal standards, Lighting standards, Vanpools-carpools, Government purchasing, Right turn on red, and various optional programs involving industrial, commercial, residential, and agricultural sectors.

PB-293 550/0GA PC **A07**/MF **A01**
Oregon Dept. of Energy, Salem.
Oregon Energy Conservation Plan in Response to the Federal Energy Policy and Conservation Act of 1975 Public Law-94-163.
1977, 146p

Descriptors: *Regional planning, *Oregon, Buildings, Transportation, Agriculture, Industrial plants, Thermal efficiency, Illuminating, Solar energy, Wind power, Reclamation, Economic analysis, Budgeting, Environmental impacts.
Identifiers: *Energy conservation, Energy source development, Federal Energy Policy and Conservation Act of 1975, Residential sector, Transportation sector, Agricultural sector, Industrial sector, Commercial sector, Geothermal energy.

A partial listing of contents includes: Energy use in Oregon - the need for conservation and resource development; An economic perspective - priorities for conservation and resource development; Budget and funding; Energy savings summary; Mandatory requirements; Detailed description of conservation and resource development plan; Environmental residuals summary.

PB-293 760/5GA PC **A11**/MF **A01**
Tata Energy Research Inst., Bombay (India).
Directory of Solar Energy Research Projects in India.
Mar 78, 231p
Sponsored in part by Agency for International Development, Washington, DC.

Descriptors: *Directories, *Research projects, *Solar energy, *India, Solar radiation, Heat storage, Energy storage, Space heating, Electric power generation, Heat exchangers, Air conditioning, Refrigeration, Heat pumps, Greenhouses.
Identifiers: Listings, Solar collectors, Process heat, Photovoltaic conversion, Heat pipes, Solar ponds, Developing country application.

This directory contains data on about 140 research projects in the area of solar thermal conversion and photovoltaic processes. As a reference tool, the book should help in greater communication and cross fertilization of ideas in the field of solar energy and provide a panoramic view of solar energy research in India. The directory is divided into four sections: subject categories, list of institutions, list of investigators, and project information sheets.

10B. Power Sources

AD-A065 009/3GA PC **A04**/MF **A01**
Spectrolab, Inc., Sylmar, CA.
High Efficiency Solar Panel (HESP-II).
Final technical rept. Aug 77-Jun 78,
P. M. Stella, F. M. Uno, and Jay W. Thornhill.
Aug 78, 74p AFAPL-TR-78-60
Contract F33615-77-C-3108

Descriptors: *Solar panels, *Solar cells, *Spacecraft components, Power supplies, Energy conversion, Efficiency, Silicon, Radiation Damage, Solar radiation, Synchronous satellites, Accelerated testing, Gettering, Metals, Laminates.

The objective of this program is to develop space qualified weapon survivable silicon solar cells having a BOL conversion efficency of 16% at 25 C under AMO illumination. After seven (7) years in the synchronous orbit environment (approximately 3 x 10 exp (14) 1 meV electrons/square centimeter equivalent irradiation) the cells shall not degrade more than 13% in conversion efficiency. The status of the work at this point and the performance of the most recent state-of-the-art cells delivered as representative samples are reported. The results obtained to date indicate that some of the processes chosen for optimization have not proven as fruitful as orginally anticipated, while others have demonstrated marked success. The task now is to integrate these various optimizations into an integrated sequence to fabricate cells that meet or surpass the requirements. A list of possible additional investigations, which appear pertinent and useful to this effort, is included in the section entitled Recommendations. (Author)

N79-19175/5GA PC **A04**/MF **A01**
Honeywell Corporate Material Sciences Center, Bloomington, MN.
Silicon on Ceramic Process: Silicon Sheet Growth and Device Development for the Large-Area Silicon Sheet and Cell Development Tasks of the Low-Cost Solar Array Project.
Quarterly Report, 30 Sep. - 31 Dec. 1978.
P. W. Chapman, J. D. Zook, J. D. Heaps, C. Pickering, and B. L. Grung. 31 Jan 79, 62p
NASA-CR-158370, DOE/JPL-954356-78/4
Contract JPL-954356
Subm-Prepared for JPL.

Descriptors: *Ceramics, *Crystal growth, *Silicon, *Solar arrays, Solar cells, Coating, Fabrication, Low cost, Mechanical properties, Metal sheets, Substrates.
Identifiers: *Silicon solar cells.

For abstract, see STAR 1710

N79-19448/6GA PC **A04**/MF **A01**
RCA Labs., Princeton, NJ.
Epitaxial Solar-Cell Fabrication, Phase 2.
Final Report, 11 Nov. 1974 - 10 Jun. 1977.
R. V. Daiello, P. H. Robinson, and H. Kressel.
Nov 77, 75p NASA-CR-135350, PRRL-77-CR-46
Contract NAS3-19401

Descriptors: *Epitaxy, *Solar cells, Additives, Base heating, Electric potential, Electrical resistance, Performance tests, Surface layers.
Identifiers: *Silicon solar cells, Semiconductor doping, Efficiency.

For abstract, see STAR 1710

N79-19452/8GA PC **A04**/MF **A01**
North Carolina State Univ. at Raleigh. Dept. of Electrical Engineering.
A Theoretical Study of Heterojunction and Graded Band Gap Type Solar Cells.
Final Report.
J. P. C. Chiang, and J. R. Hauser. Mar 79, 51p
NASA-CR-158232
Grant NSG-1116

Descriptors: *Solar cells, Computer programs, Energy gaps(Solid state), Electron radiation, Gallium alloys, Radiation effects, Solar activity effects, Temperature effects, Temperature gradients.
Identifiers: *Heterojunction devices, Physical radiation effects, Mathematical models.

For abstract, see STAR 1710

N79-19456/9GA PC **A03**/MF **A01**
Optical Coating Lab., Inc., City of Industry, CA. Photoelectronics Div.
Development of Low Cost Contacts to Silicon Solar Cells.
Quarterly Report, 15 Oct. - 31 Dec. 1978.
P. A. Iles, and D. P. Tanner. 31 Dec 78, 50p
NASA-CR-158352, DOE/JPL-955244-79/1
Contract JPL-955244

Descriptors: *Electric contacts, *Solar cells, *Value engineering, Copper, Electrolytes, Electroplating, Heat treatment, Metal coatings, Silicon.

For abstract, see STAR 1710

N79-19458/5GA PC **A05**/MF **A01**
Florida Univ., Gainesville. Dept. of Electrical Engineering.
Studies of Silicon PN Junction Solar Cells.
Final Technical Report.
F. A. Lindholm, and A. Neugroschel. Sep 77, 88p
NASA-CR-158173, TR-77-1
Grant NSG-3018

Descriptors: Current distribution, Electrical measurement, P-n junctions, Silicon, Solar cells, Carrier mobility, Circuits, *Heterojunction devices, Photovoltages, Recombination reactions.
Identifiers: *Silicon solar cells.

For abstract, see STAR 1710

N79-19459/3GA PC **A02**/MF **A01**
Solarex Corp., Rockville, MD.
Development of an Improved High Efficiency Thin Silicon Solar Cell.
Quarterly Report.
C. Wrigley, and G. Storti. Jul 78, 10p NASA-CR-158172, SX/115/3Q
Contracts NAS7-100, JPL-954883

Descriptors: Solar cells, Thin plates, Efficiency, Reflectance, Upgrading.
Identifiers: *Silicon solar cells.

For abstract, see STAR 1710

N79-19460/1GA PC **A04**/MF **A01**
Jet Propulsion Lab., Pasadena, CA.
Thermal and Other Tests of Photovoltaic Modules Performed in Natural Sunlight.
J. W. Stultz. 31 Jul 78, 58p NASA-CR-158174, JPL-5101-76
Subm-Sponsored by NASA and DOE.

Descriptors: *Electronic modules, *Photovoltaic cells, *Solar cells, *Thermodynamic properties, Cooling, Cost effectiveness, Electrical properties, Installing, Performance tests, Structural design, Water.

For abstract, see STAR 1710

N79-19462/7GA PC **A05**/MF **A01**
Jet Propulsion Lab., Pasadena, CA.
LSA Low-Cost Solar Array Project.
Quarterly Report, Oct. - Dec. 1977.
Dec 77, 76p NASA-CR-158250, JPL-5101-81
Subm-Sponsored by NASA and DOE.

Descriptors: *Solar arrays, Cost analysis, Low cost, Management planning, Production engineering, Silicon, Solar energy conversion, Technology assessment.
Identifiers: *Silicon solar cells, LSSA project.

For abstract, see STAR 1710

N79-19866/9GA PC **A05**/MF **A01**
State Univ. of New York at Buffalo, Amherst.
Experimental and Theoretical Investigation for the Suppression of the Plasma Arc Drop in the Thermionic Converter.
D. T. Shaw, C. N. Manikopoulos, T. Chang, C. H. Lee, and N. Chiu. 31 Dec 77, 98p NASA-CR-158248, LAPES-77-003
Grant NSG-7071
Subm-Sponsored in Part by NSF and ERDA.

Descriptors: *Cesium ion, *Plasma jets, *Plasma-particle interactions, *Resonance testing, *Thermionic power generation, Cavity resonators, Microwave plasma probes, Nitrogen, Plasma control.

For abstract, see STAR 1710

PATENT-4 104 883 Not available NTIS
Department of the Navy Washington DC
Mass Transport Heat Exchanger Method and Apparatus for Use in Ocean Thermal Energy Exchange Power Plants.
Patent,
Frederick E. Naef. Filed 27 May 77, patented 8 Aug 78, 6p AD-D005 805/7, PAT-APPL-801 180
Supersedes PAT-APPL-801 180-77, AD-D004 058.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $0.50.

Descriptors: *Patents, *Heat exchangers, Ocean environments, Ammonia, Surface waves, Gases, Sea water, Phase transformations.
Identifiers: PAT-CL-60-641, *Ocean thermal power plants, *Ocean thermal energy conversion.

Ocean thermal energy conversion (OTEC) uses a fluid, such as ammonia, heated by high-temperature surface water to provide a turbine-driving working gas. To condense the gas for re-use, a slurry of phase-transformation particles and cold ambient sea water is mixed in a deeply-submerged tank and delivered to a surface tank essentially at the cold sub-surface temperature. Condensing of the working gas is performed at the ocean surface level by exposure to the cold slurry temperature. Particle phase-transformation, which occurs at a temperature between that of the cold sub-surface water and the reject temperature of the heat-exchanger, maintans a surface tank temperature at about the sub-surface water. (Author)

PATENT-4 115 632 Not available NTIS
Department of Energy, Washington, DC.
Method of Preparing Electrolyte for Use in Fuel Cells.
Patent,
K. Kinoshita, and J. P. Ackerman. Filed 5 May 77, patented 19 Sep 78, 10p PAT-APPL-794 295
Supersedes PAT-APPL-794 295-77.
This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC. 20231 $0.50.

Descriptors: Aluminates, *Electrolytes, *Fuel cells, *High-temperature fuel cells, Lithium compounds, Carbonates, Chemical preparation, Fabrication, Hydroxides, Molten salts.
Identifiers: ERDA/300503, ERDA/360601, *Patents, Lithium aluminates.

For abstract, see ERA citation 04:023573.

PB-293 437/0GA PC **A06**/MF **A01**
Lake Champlain Basin Study, Burlington, VT.
Energy Use and Supply in the Lake Champlain Basin.
Final rept.,
Jonas Barish. Oct 78, 119p LCBS-20
Prepared by Federal Energy Regulatory Commission, Washington, DC. Report on Lake Champlain Basin Study.

Descriptors: *Power supplies, *Lake Champlain Basin, Fossil fuels, Steam electric power plants, Nuclear power plants, Electric power demand, Solar energy, Wood, Wind power generation, Environmental impacts, Cooling towers, Fishes, Wildlife, Waste disposal, Air pollution, Nuclear reactor safety, Conservation, Vermont, New York.
Identifiers: *Energy demand, *Energy supplies.

This study examined the energy and power needs and supply within the Lake Champlain Basin. This report drew all available information from these overlapping jurisdictions, and presents projected energy demands to the year 1990. It provides a thorough discussion of the utility grid system, energy supplies, load forecasts, state and federal legislation involving energy questions, energy sources - developed and undeveloped, and environmental considerations. In addition it recommends energy actions for the basin, including a discussion of energy alternatives.

PB-294 413/0GA PC **A06**/MF **A01**
Indian Inst. of Science, Bangalore. Dept. of Aeronautical Engineering.
A Low-Cost Water Pumping Windmill Using a Sail Type Savonius Rotor,
S. P. Govinda Raju, and R. Narasimha. Jan 79, 110p 79/FM/2
Sponsored in part by Agency for International Development, Washington, DC.

Descriptors: *Windmills, *Pumps, Wind power generation, Rotors, Developing countries, Structural design, Rural areas.
Identifiers: Developing country application, *Savonius rotors, Water pumps.

A water pumping windmill which can be built largely using materials and skills available in rural areas has been designed and fabricated. The windmill uses a Savonius rotor and incorporates a novel sail type construction. The pump is of positive displacement type using the casing of a pneumatic tire for the pumping chamber. Two prototypes have been constructed and these have indicated a reasonable performance and reliability.

10C. Energy Storage

AD-A064 977/2GA PC **A05**/MF **A01**
Mallory (P.-R.) and Co., Inc., Burlington, MA. Lab. for Physical Science.
Analysis of Pressure Producing Reactions in Lithium-Sulfur Dioxide Cells.
Interim rept. no. 1, 15 Sep 77-30 Sep 78,
A. N. Dey, and R. W. Holmes. Feb 79, 97p
DELET-TR-77-0472-1
Contract DAAB07-77-C-0472

Descriptors: *Storage batteries, Lithium, Sulfur oxides, High energy, High density, Power supplies, Electrolytes, Safety, Differential thermal analysis, Activation energy, Acetonitrile, Hermetic seals, Chemical reactions.
Identifiers: State of the art, *Lithium sulfur dioxide cells.

Although the State-of-the-Art hermetically sealed high-rate D cells made by P.R. Mallory and Co. Inc. are sufficiently abuse resistant for many applications, this program was initiated to explore the feasibility of improving the intrinsic abuse resistance of the system even further by chemical and/or mechanical means, so that the product may be rendered Safe under all user conditions. The approach that was pursued involved: (a) the identification of the chemical reactions responsible for the pressure buildup and/or thermal runaway, (b) the determination of the sensitivity of these reactions to the various use and abuse variables, and (c) the development of methods to desensitize these reactions.

AD-A065 286/7GA PC **A03**/MF **A01**
Frank J. Seiler Research Lab., United States Air Force Academy, CO.
Discharge Characteristics of LiAl/NaAlCl sub 4/FeCl sub 3 Thermal Cells.
Technical rept.,
Robert L. Vaughn, and Lowell A. King. Feb 79, 33p Rept no. FJSRL-TR-79-0001

Descriptors: *Thermal batteries, *Reserve batteries, Lithium alloys, Aluminum alloys, Chlorides, Intermetallic compounds, Iron compounds, Sodium compounds, Electrochemistry, Anodes, Electrolytes, Electric discharges.
Identifiers: Lithium intermetallics, Aluminum intermetallics.

Pelletized thermal battery single cell experiments are described for the lithium-aluminum/sodium tetrachloroaluminate/iron(III) chloride electrochemical system. The cells were optimized for anode, eletrolyte, and cathode composition. The cell discharge behavior was characterized, defining optimum conditions of temperature and discharge rate to produce maximum energy output.

N79-19449/4GA PC **A03**/MF **A01**
Jet Propulsion Lab., Pasadena, CA.
Primary Lithium Battery Technology and Its Application to NASA Missions.
H. A. Frank. 15 Feb 79, 30p NASA-CR-158229, JPL-PUB-79-6
Contract NAS7-100

Descriptors: *Storage batteries, Lithium, Space missions, Launch vehicles, Performance, Spacecraft power supplies, Spacecraft propulsion.
Identifiers: *Lithium cells, Vanadium oxides, Sulfur dioxide.

For abstract, see STAR 1710

N79-19454/4GA PC **A12**/MF **A01**
Comstock and Wescott, Inc., Cambridge, MA.
Development of a Phase-Change Thermal Storage System Using Modified Anhydrous Sodium Hydroxide for Solar Electric Power Generation.
B. M. Cohen, R. E. Rice, and P. E. Rowny. Dec 78, 252p NASA-CR-159465, DOE/NASA/0615-79/1
Contracts NAS3-20615, EC-77-A-31-1034
Subm-Prepared for DOE.

Descriptors: *Electric generators, *Heat exchangers, *Phase transformations, *Sodium hydroxides, *Solar generators, Computer programs, Cost analysis, Design analysis, Heat storage, Mathematical models, Scale models, Temperature profiles, Thermophysical properties.

For abstract, see STAR 1710

PAT-APPL-6-008 997/GA PC **A02**/MF **A01**
Department of the Navy Washington DC
Protected Calcium Anode in Molten Nitrates.
Patent Application,
Melvin H. Miles, Aaron Stanifer, and Dan E. Bliss. Filed 5 Feb 79, 16p AD-D005 825/5
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

Descriptors: *Patent applications, *Anodes(Electrolytic cell), *Calcium, *Thermal batteries, *Nitrates, Fused salts, Lithium compounds, Potassium compounds, Electrolytes.

An object of the invention is to provide a calcium anode for use in molten nitrate electrolytes, where the electrolyte can also serve as the oxidizer. A further object of the invention is to provide an anode and an electrolyte which will operate at lower temperatures than prior art thermal batteries.

PAT-APPL-6-008 998/GA PC **A02**/MF **A01**
Department of the Navy Washington DC
Non-Flashing Electrolyte for Use with Calcium Anode.
Patent Application,
Aaron N. Fletcher, Charles D. Stanifer, and Dan E. Bliss. Filed 5 Feb 79, 4p AD-D005 826/3
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

Descriptors: *Patent applications, *Anodes(Electrolytic cell), *Calcium, *Thermal batteries, *Nitrates, Fused salts, Electrolytes, Lithium compounds, Potassium compounds, Chlorides.

Two problems associated with the use of a calcium anode in a molten nitrate electrolyte are flashing and the formation of a passivating layer of CaO on the calcium anode. 'Flash' refers to a rapid sustained reaction of calcium with nitrate, yeilding a flash of light. If flashing occurs, then the calcium may be suddenly consumed so that there can be no further flow of electrical current. The present invention solves the above problems by providing a non-flashing electrolyte which is a mixture of K(+), Li(+), nitrate and chloride and which controls the CaO layer so that calcium ions may pass through the layer.

PAT-APPL-6-009 038/GA PC **A02**/MF **A01**
Department of the Navy Washington DC
High Energy Density Thermal Cell.
Patent Application,
Aaron N. Fletcher. Filed 5 Feb 79, 7p AD-D005 827/1
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

Descriptors: *Patent applications, *Thermal batteries, High energy, High density, Fuzes(Ordnance), Guidance, Control systems, Mines(Ordnance), Guided missiles, Torpedoes, Laser target designators, Depth charges, Calcium compounds, Anodes, Cathodes, Electrolytes.
Identifiers: Performance evaluation.

The present invention uses a calcium anode and a catholyte. As used herein, the term 'catholyte' means a combined cathode and electrolyte. The anions in the catholyte are 10 to 20 mole percent chloride ions with the remainder being nitrate ions. The cations are 50 to 75 mole percent lithium ions with remainder being potassium ions. It is an object of the invention to provide a long lasting thermal cell which has a high energy density output and which operates within a wide range of temperatures wherein the lower limit of the range is a moderate temperature. (Author)

11. MATERIALS

11A. Adhesives and Seals

AD-A064 878/2GA PC **A03**/MF **A01**
David W. Taylor Naval Ship Research and Development Center, Bethesda, MD.
Specification for Filled-PTFE Sleeve-Type Piston Seals for High-Pressure Oil-Free Compressors.
Robert M. Giannini, and Harry J. Skruch. 14 Feb 79, 34p Rept no. DTNSRDC-TM-27-78-96

Descriptors: *Seals(Stoppers), *Air compressors, Naval procurement, Sleeves, Pistons, Fillers, Fluoropolymers, Polyethylene plastics, Specifications, Military requirements, Quality assurance, Test methods, Shipboard, Blending, Molding techniques.
Identifiers: Tetrafluoroethylene resins, Teflon.

Specifications covering material ingredients, fabrication, and testing of filled polytetrafluoroethylene sleeve-type piston seals for shipboard oil-free compressors are provided. Procedures for blending, molding, and assuring material quality are described. (Author)

AD-A065 361/8GA PC **A03**/MF **A01**
Army Armament Research and Development Command, Dover, NJ. Large Caliber Weapon Systems Lab.
Improved Adhesive Bond Permanence with Reactive Organosilane Coupling Agents.
Technical rept.,
G. Robert Sacco, and William C. Tanner. Nov 78, 36p ARLCD-TR-78042, AD-E400 267

Descriptors: *Adhesive bonding, *Silanes, *Adhesives, Interfaces, Surfaces, Metal compounds, Oxides, Epoxy resins, Adhesion, Bonded joints, Life expectancy, Stainless steel, Aluminum alloys, Etching, Organometallic compounds, Adverse conditions, Water, Coupling(Interaction), Reactivities.
Identifiers: *Organosilanes, Primers(Coatings), Adherend surfaces, Silane/mercapto-propyl-trimethoxy, Silane/glycidoxy-proply-trimethoxy.

Five reactive organosilane coupling agents, (Dow Corning Z6020, Z6032, Z6040, Z6062 and Union Carbide Corp. A-1100) were evaluated as adhesion promoters to improve the adhesive bond strength of 2024T3, 6061T4 aluminum alloys and 302 stainless steel and to protect the bonds against the deleterious effects of water. The organosilane coupling agents, mercaptopropyltrimethoxysilane (D.C.Z6062), and glycidoxypropyltrimethoxysilane (D.C.Z6040) generally showed better bond strength intially and after adverse exposure than the control samples when bonded with room temperature-curing epoxy resin. The glycidoxypropyltrimethoxysilane (Z6040) showed bettter initial bond strength than the control samples and good retention of bond integrity after adverse exposure when used with aluminum alloys and an intermediate cure temperature (121 C (250 F)) epoxy adhesive. The remaining organosilanes did not show appreciable improvement over the control samples. (Author)

AD-A065 417/8GA PC **A06**/MF **A01**
Ceramic Finishing Co., State College, PA.
Fractographic Investigation of Subcritical Crack Growth at inherent Flaws in Polycrystalline Ceramics.
Summary rept. Apr 77-Nov 78,
Henry P. Kirchner, Robert M. Gruver, and Dominique M. Richard. Nov 78, 113p
Contract N00019-77-C-0328

Descriptors: *Aluminum oxides, *Silicon nitrides, *Fracture(Mechanics), *Crack propagation, Fractography, Defects(Materials), Polycrystalline, Hot pressing, Stress concentration, Single crystals, Crystal substructure, Grain boundaries.
Identifiers: *Ceramics.

Variations in intergranular and transgranular fracture along radii extending from fracture origins in hot pressed (H.P.) alumina, 96% alumina and H.P. silicon nitride were studied. The percent intergranular fracture (PIF) was plotted versus stress intensity factor (K sub I) for various distances from the fracture origins assuming smooth crack fronts and the absence of localized stresses. The observed variations were analyzed in relation to single crystal and polycrystal K sub IC values. The results were used to suggest fractographic criteria for subcritical crack growth boundaries in these materials. (Author)

AD-A065 500/1GA PC **A09**/MF **A01**
Vought Corp. Advanced Technology Center, Inc., Dallas, TX.
Structural Properties of Adhesives. Volume I.
Final technical rept. Apr 76-Sep 78,
W. J. Renton. Sep 78, 194p 2-53500/8CRL-96, AFML-TR-78-127-VOL-1
Contract F33615-76-C-5205
See also Volume 2, AD-A065 521.

Descriptors: *Adhesives, *Adhesive bonding, Surface finishing, Structural response, Bonded joints, Mathematical prediction, Viscoelasticity, Loads(Forces), Data acquisition, Test methods, Test equipment, Mechanical properties, Airframes, Aerospace systems.
Identifiers: Specifications.

To enable primary structures to be adhesively bonded in future aerospace hardware structural response prediction procedures must be improved upon. One task in accomplishing this overall objective is a requirement that a set of standardized adhesive test specifications be formulated. It was the objective of this 'Structural Properties of Adhesives' program to develop low cost adhesive test procedures required to generate the required rigorous engineering structural property data. The desired engineering structural properties were specified as was their accuracy requirements. Optimum adhesive test specimens were designed as was a new adhesive deformation measurement system; a parallel plate capacitor. An extensive review of the literature on adhesive testing enabled the formulation of ASTM type adhesive test specifications for static, viscoelastic, and fatigue characterization of adhesives. A fabrication specification was also formulated. Selected test data were generated to verify that the test procedures were easy to perform and repeatable. Additional improvements in the butt joint test procedure were recommended. (Author)

PATENT-4 140 727 Not available NTIS
Department of the Air Force Washington DC
Fluoroalkyleneether Silicate Copolymers.
Patent,
Robert E. Cochoy, and Alan A. Shaffer. Filed 10 Jan 78, patented 20 Feb 79, 7p AD-D005 820/6, PAT-APPL-868 355
Supersedes PAT-APPL-868 355-78, AD-D004 694.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $0.50.

Descriptors: *Patents, *Sealing compounds, *Copolymers, *Synthesis(Chemistry), Silicates, Ethers, Fluorine compounds, Fluoropolymers, Elastomers, Seals(Stoppers).
Identifiers: PAT-CL-260-827, Silane/bis(dimethylamino)-methyl-vinyl.

Fluoroalkyleneether silicate copolymers are synthesized by the polycondensation of a bis-dimethylcarbinol containing a fluoroalkyleneether segment and bis(dimethylamino) methylvinylsilane. The copolymers are useful in applications, e.g., as seals and sealants, involving use temperatures ranging from about -90 C to 600 deg. C. They are particularly useful when blended with a fluorocarbon elastomer, enhancing the strength and low temperature flexibility of the elastomer. (Author)

11B. Ceramics, Refractories, and Glasses

AD-A064 980/6GA PC **A02**/MF **A01**
Brown Univ., Providence, RI. Div. of Engineering.
Microstructural Analysis of Reaction-Bonded Silicon Nitride,
H. M. Jennings, S. C. Danforth, and M. H. Richman. Aug 75, 21p ARO-10618.2-MC
Contract DA-ARO-D-31-124-72-G183
Availability: Pub. in Metallography, v9 p427-446 1976.

Descriptors: *Silicon nitrides, Bonding, Microstructure, Crystal structure, X rays, Electron diffraction, Reprints.
Identifiers: Structural analysis.

No abstract available.

AD-A065 282/6GA PC **A02**/MF **A01**
Pennsylvania State Univ., University Park. Dept. of Materials Science.
Alteration of Flaw Sizes and K sub Ic's of Si3N4 Ceramics by Molten Salt Exposure,
W. C. Bourne, and R. E. Tressler. 1978, 13p ARO-15107.2-MS
Grant DAAG29-78-G-0016
Availability: Pub. in Fracture Mechanics of Ceramics, v3 p113-124 1978.

Descriptors: *Silicon nitrides, *Magnesium oxides, Exposure(General), Fused salts, Defects(Materials), Ceramic materials, Reprints.
Identifiers: Revisions.

No abstract available.

PB-293 844/7GA PC **A04**/MF **A01**
Appropriate Technology Development Association, Lucknow (India).
The Development of an Appropriate Technology for Decentralised Pottery Industry in Rural India.
Case study series no. 1,
M. K. Garg. 1965, 73p
Sponsored in part by Agency for International Development, Washington, DC.

Descriptors: *Pottery, *Industries, Clays, Processing, Forming techniques, Coloring, Tableware, Rural areas, Technical assistance, Developing countries, India.
Identifiers: Developing country application, Villages, Appropriate technology.

The study is based upon the author's work undertaken in the service of the Planning Research and Action Institute and the Department of Industries of the government of Uttar Pradesh. It is published in the interest of promoting decentralized small scale industries throughout India and the world.

11C. Coating, Colorants, and Finishes

AD-A064 990/5GA PC **A03**/MF **A01**
Lehigh Univ., Bethlehem, PA. Francis MacDonald Sinclair Memorial Lab.
Corrosion Control by Coatings. A Discussion Held at Lehigh University, Bethlehem, Pennsylvania, on 13-15 November 1978.
Final rept. 1 May 78-31 Jan 79,
Henry Leidheiser, Jr. 2 Feb 79, 29p
Grant N00014-78-G-0029

Descriptors: *Protective coatings, *Corrosion resistance, Barrier coatings, Reports, Conferencing(Communications), Galvanic corrosion, Steel, Aluminum alloys, Zinc alloys, Gold, Electrodeposition, Intermetallic compounds, Electrical properties, Organic coatings, Anodic coatings.

The grant provided support for a Discussion on Corrosion by Coatings which was held in the Sinclair Laboratory, Lehigh University on November 13-15, 1978. The program was arranged in six half-day sessions on the following subjects: Sacrificial Coatings for Corrosion control; Barrier Coatings for Corrosion Control; Pretreatment Processes and Conversion Coatings; Inhibitors in Coatingss; Design of Coatings for Other than Corrosion Control; and Coatings Science.

AD-A065 037/4GA PC **A05**/MF **A01**
National Academy of Sciences-National Research Council, Washington, DC. Highway Research Board.
Night Visibility, Bulletin 56, Publication 236.
1952, 84p Rept no. PUB-236
Presented at the Annual Meeting (31st), Jan 52.

Descriptors: *Night vision, *Operators(Personnel), *Automotive vehicles, Safety, Automotive engineering, *Visibility, Performance(Human), Safety equipment, Dark adaptation, Highways, Drivers(Personnel).
Identifiers: *Bulletins, Safety engineering.

The 1950 revised American Standard Code for Safety Glazing Materials for Motor Vehicles establishes requirements for glazing materials installed within 'levels requisite for driving visibility.' A study to determine the extent of glazed areas necessary for driving visibility is reported upon. Data on current passenger cars are given showing the areas available for seeing by all but the tallest 2.5 percent and all but the shortest 2.5 percent of California licensed drivers. Visibility angles required for observance of traffic signals are also given. From the above data and information on human dimensions, a method is suggested for determining the levels requisite for driving visibility applicable to any automobile for various percentages of drivers. The dimensions and technique for checking windshields to establish a level that will include 85 percent of the drivers is given. This percentage was tentatively agreed upon as a practical value by the Engineering Committee of the American Association of Motor Vehicle Administrators in June 1951. (Author)

PATENT-4 133 862 Not available NTIS
Department of the Navy Washington DC
Method of Inhibiting and/or Eradicating Marine Fungal Growth with Obtusastyrene.
Patent,
John D. Bultman, Donald D. Ritchie, and Leonard Jurd. Filed 6 Jun 77, patented 9 Jan 79, 5p AD-D005 809/9, PAT-APPL-804 193
Supersedes PAT-APPL-804 193-77, AD-D005 044.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $0.50.

Descriptors: *Patents, *Antifouling coatings, *Fungicides, Fungi, Protective treatments, Wood, Marine engineering.
Identifiers: *Obtusastyrene, PAT-CL-422-28, *Styrenes.

Marine fungal growth is inhibited and/or eradicated in wood by contacting the wood with obtusastyrene.

11D. Composite Materials

AD-A064 851/9GA PC **A03**/MF **A01**
Drexel Univ., Philadelphia, PA. Dept. of Materials Engineering.
Fatigue Crack Propagation in a (Co,Cr)-(Cr,Co)7C3 Composite.
Technical rept.,
M. H. Abdel Latif, and A. Lawley. Dec 78, 37p
Contract N00014-76-C-0205

Descriptors: *Eutectic composites, *Fiber reinforced composites, *Cobalt alloys, *Chromium alloys, Gas turbines, *Crack propagation, Fracture(Mechanics), Fractography, Toughness, Fatigue(Mechanics), Fibers, Composite materials, Microstructure, Heat treatment, Cobalt compounds, Chromium compounds, Carbides.
Identifiers: Chromium carbides, Cobalt carbides, Ceramic fibers.

Fatigue crack propagation in the Co,Cr-(Cr,Co)7C3 in-situ composite has been characterized at room temperature in the as-grown condition and following post-solidification isothermal exposure or thermal cycling. The dependence of da/dN on delta K follows the Paris-Erdogan relation over the range delta K approx 10 MN/m(superscript 3/2) to 50 MN/m (superscript 3/2). Fracture toughness is low in the as-grown condition and is attributed to restricted matrix slip and a low stacking fault energy in the cobalt-rich matrix coupled with the absence of delamination. The heat treatments enhance fracture toughness and this is shown to be the result of precipitation of (Co,Cr)23C6 in the matrix and/or fiber coarsening with an attendant increase in the interfiber spacing. At the lower end of the delta K range fatigue cracking is primarily crystallographic (stage I) in nature. Stage II cracking, with the fracture surface normal to the stress axis, is operative at the upper end of the delta K range.

AD-A064 852/7GA PC **A03**/MF **A01**
Drexel Univ., Philadelphia, PA. Dept. of Materials Engineering.
Effect of Thermal Treatment on the Structure and Toughness of the Co,Cr-(Cr,Co)7C3 In-Situ Composite.
Technical rept.,
M. H. Abdel Latif, and A. Lawley. Dec 78, 37p
Contract N00014-76-C-0205

Descriptors: *Eutectic composites, *Fiber reinforced composites, *Cobalt alloys, *Chromium alloys, Gas turbines, Gas turbine blades, Matrix materials, Microstructure, Fibers, High temperature, Thermal stability, Carbides, Cobalt compounds, Chromium compounds, Toughness, Composite materials.
Identifiers: Chromium carbides, Cobalt carbides, Ceramic fibers.

Work of fracture in the Co,Cr-(Cr,Co)7C3 in-situ composite has been determined at room temperature in the as-grown condition and following post-solidification isothermal exposure or thermal cycling. Toughness is low in the as-grown condition and is attributed to restricted matrix slip and a low stacking fault energy in the cobalt-rich matrix coupled with the absence of crack deflection and matrix-interface delamination. In general, the heat-treatments did not lead to any major deterioration in toughness, rather in some cases toughness was enhanced by a factor of about two over that in the as-grown composite. Changes in toughness after isothermal exposure are attributed to micro-structural changes involving degeneration of the (Cr,Co)7C3 into a precipitate of (Cr,Co)23C6 and to fiber coarsening with an attendant increase in interfiber spacing and fiber diameter. In thermal cycling, thermal fatigue and fiber degradation are superimposed on degeneration and coarsening. A model based on thermal residual stresses and strains resulting from thermal expansion mismatch of matrix and fiber has been developed; experimental results for the two cycling regimes examined are in good agreement with the model. The increase in toughness is proportional to the temperature range of the cycle.

AD-A064 853/5GA PC **A02**/MF **A01**
Drexel Univ., Philadelphia, PA. Dept. of Materials Engineering.

Elevated Temperature Stability of a Co-Cr-C In-Situ Composite.
Technical rept.,
Y. Taniyama, and A. Lawley. Nov 78, 23p
Contract N00014-76-C-0205

Descriptors: *Eutectic composites, *Cobalt alloys, *Chromium alloys, Carbon alloys, *Gas turbines, *Fiber reinforced composites, Matrix materials, Microstructure, Fibers, High temperature, Thermal stability, Nickel alloys, Carbides, Cobalt compounds, Chromium compounds, Composite materials, Reinforcing materials.
Identifiers: Oriented fiber composites, Chromium carbides, Cobalt carbides, Ceremic fibers.

Monovariant eutectic alloys of Co-Cr-C offer potential in advanced gasturbine technology. Key to performance is stability of microstructure and hence strength integrity at elevated temperatures. To assess microstructural stability, composites of composition Co-41% Cr-2.4% C were subjected to isothermal exposures at homologous temperatures of 0.85, 0.89, and 0.92 respectively, for times up to 2500000 S. The composite consists of an aligned rod-like reinforcement of (Cr,Co)7C3 at Vf 0.3 in a colbalt-rich solid solution matrix. Transverse sections were examined as a function of (T,t) by a combination of optical and scanning electron microscopy and provided the basis for a detailed and quantitative evaluation of changes in rod density (number per unit area), rod spacing, spread of spacings, rod shape and shape spread. While the observations confirm good high-temperature stability, changes in microstructure occured with an associated decrease in rod density. The faceted appearance of the carbide rods, characteristic of the as-grown condition, gave way to a more rounded appearance. Subtle manifestations of structural instability exist which are related to the irregular cross-sectional form of the rod carbides in the as-grown composite. Data have been analyzed in terms of the competing coarsening mechanisms of two-dimensional ripening, fault migration and fault migration plus annihilation. (Author)

AD-A065 042/4GA PC **A02**/MF **A01**
Drexel Univ., Philadelphia, PA. Dept. of Materials Engineering.
The Role of the Interface on the Mechanical Behavior of Metal Matrix Composites.
Final rept.,
A. Lawley. Jan 79, 15p
Contract N00014-76-C-0205

Descriptors: *Composite materials, Metals, Matrix materials, *Mechanical properties, Microstructure, Cobalt, Chromium, Carbides, Nickel, Filaments, Tungsten, Isotherms, Thermal stresses, Cyclic rate, Crack propagation, Heat treatment, Plastic properties.
Identifiers: *Metal matrix comoposites, Metal fibers, Ceramic fibers, Chromium carbides, Cobalt carbides.

The microstructural stability and mechanical behavior of the in-situ Co,Cr-(Cr,Co)7C3 composite and filamentary Ni-Mo and nichrome-tungsten composites have been characterized as a function of isothermal exposure and various regimes of thermal cycling. Properties examined were strength, toughness and resistance to fatigue crack propagation. Correlations were developed between microstructural change accompanying each mode of heat-treatment and the above properties. This provided the basis for the development of models for plastic flow and crack initiation/propagation in the two types of composite material which can account for the observed effect(s) of the heat-treatment imposed. (Author)

AD-A065 086/1GA PC **A02**/MF **A01**
Rockwell International, Thousand Oaks, CA. Science Center.
Environmental Durability of Fiber Reinforced Composites.
Final rept. 1 Dec 76-30 Nov 78,
D. H. Kaelble. 30 Nov 78, 17p SC5090.4FR(R), ARO-14414.3-MS
Contract DAAG29-77-C-0005

Descriptors: *Fiber reinforced composites, Epoxy resins, *Graphite, degradation, Environmental tests, Glass fibers, Water absorption tests, Compressive properties, Shear strength, Fracture(Mechanics), Microhardness.
Identifiers: Carbon fiber reinforced plastics, Fiberglass reinforced plastics, Epoxy matrix composites, Graphite reinforced composites.

An investigation has been completed which determines the physiochemical mechanisms of environmental durability and degradation of graphite-epoxy (Thornel T300 in 5208 epoxy) and fiber glass-epoxy S-2 glass in 5208 epoxy) under hydrothermal (high moisture and temperature) exposure. Surface energy and moisture diffusion analysis provide nondestructive test methods which detect irreversible degradation of the fiber-matrix interface. Dynamic mechanical damping detects reversible volumetric plasticization effect on modulus, and the interlaminar shear strength and transfibrous fracture energy distributions. A composite durability characterization program is demonstrated which effectively combines preventative nondestructive evaluation (PNDE) with environmental failure and micromechanics analysis of composite structural reliability. (Author)

AD-A065 138/0GA PC **A03**/MF **A01**
Naval Surface Weapons Center, White Oak Lab., Silver Spring, MD.
Ultrasonic Characterization of Aluminum Matrix Composite Elasticity: Experiment and Theory.
Progress rept. Oct 77-Aug 78,
G. V. Blessing, W. L. Elban, and J. V. Foltz. 1 Nov 78, 32p Rept no. NSWC/WOL/TR-78-159
Presented at the International Symposium on Ultrasonic Materials Characterization (1st), National Bureau of Standards, Gaithersburg, MD 8 Jan 78.

Descriptors: *Composite materials, *Aluminum, *Matrix materials, *Ultrasonic properties, Modulus of elasticity, Nondestructive testing, Heat treatment, Residual stress, Unidirectional, Graphite, Fiber reinforced composites, Silicon carbides, Whiskers(Crystals), Acoustic attenuation, Tensile stress.
Identifiers: *Aluminum matrix composites, Oriented fiber composites, Graphite reinforced composites, Ceramic fibers, Carbon fibers.

The ability to make meaningful elastic moduli measurements ultrasonically is reported for potential application to the nondestructive evaluation of aluminum matrix composites. The materials were monitored for a change in elasticity as a function of heat treatment that would affect the material's residual stress state. We evaluate initial results obtained on two unidirectional (UD) systems: (1) continuous graphite (Gr) fiber reinforced Al, and (2) discontinuous SiC whisker reinforced Al. The requisite five elastic moduli C sub ij for a UD system were obtained by measuring bulk acoustic velocities, first in the as-fabricated material. The engineering constants, e.g., longitudinal and transverse Young's moduli, were in good agreement with available tensile test data. The samples were then subjected to single cycle liquid nitrogen and elevated temperature excursions, and the elastic moduli remeasured at room temperature. Results indicate a significant effect on the residual stress state (specifically, a reduction in modulus) of Gr/Al, but no effect on SiC/Al. (Author)

AD-A065 152/1GA PC **A06**/MF **A01**
Connecticut Univ., Storrs.
A Study of the Fatigue Behavior of Fiber Reinforced Composites.
Final rept. 1 Mar 75-30 Jun 76,
A. T. DiBenedetto, and Gideon Salee. Mar 77, 111p AMMRC-CTR-77-12
Contract DAAG46-75-C-0064

Descriptors: *Fiber reinforced composites, *Fatigue(Mechanics), Graphite, Nylon, Compression molding, Isotherms, Brittleness, Crack propagation, Injection molding, Ductility, Melting, Thermal fatigue, Tensile strength, Mathematical prediction.
Identifiers: Fiber composites, *Carbon fiber reinforced plastices, Graphite reinforced composites.

The fatigue failure of graphite fiber reinforced nylon is influenced by both the technique of fabrication of the composite and environmental conditions. Compression molded materials exhibited an isothermal brittle fatigue failure through initiation and propagation of cracks. Injection molded materials were non-linear, exhibiting ductile flow prior to ultimate failure. It is postulated that localized flow at a crack tip caused thermal melting, leading to a thermally induced fatigue failure. This study indicated that processing characteristics such as fiber breakage, overlap and orientation strongly influence the fatigue endurance of the products.

AD-A065 445/9GA PC **A03**/MF **A01**
Propellants, Exposives and Rocket Motor Establishment, Waltham Abbey (England).
Behaviour and Benefits of Intimately Mixed Hybrid Composites.
Technical rept.,
N. J. Parratt, and K. D. Potter. Nov 78, 46p
PERME-TR-81, DRIC-BR-66261

Descriptors: *Carbon fibers, *Glass fibers, *Fiber reinforced composites, Hybrid systems, Strain(Mechanics), Mathematical analysis, Tensile strength, Unidirectional, Modulus of elasticity, Brittleness, Matrix materials, Great Britain.
Identifiers: *Fiber composites.

Starting from the constant strain theory of hybrid tensile strength, which only describes a lower bound for most hybrid composites, this report develops arguments to show how, in finely-mixed unidirectional hybrids the reinforcing strength of a set of fibres will assume higher values depending on their surroundings. In the case of hybrids of high modulus (HMS) carbon fibre, three characteristic levels of strength are predicted and indeed observed in the experiments reported here. These levels are, the mean fibre strength, the bundle strength referred to short gauge length, and the brittle strength which is also observed in all-HMS composites. Statistical co-ordination solutions are developed which predict the compositions of the average-bundle and the bundle-brittle transitions and also the hybrid tensile strength.

AD-A065 504/3GA PC **A02**/MF **A01**
Denver Research Inst., CO.
Measuring Triaxial Stresses in Embedded Particles by Diffraction.
C. S. Barrett, and P. K. Predecki. 1978, 4p
AFOSR-TR-79-0132
Grant AFOSR-77-3284
Availability: Pub. in Advances in X-Ray Analysis, v21 p305-307 1978.

Descriptors: *Triaxial stresses, *X ray diagnostics, *Fiber reinforced composites, Residual stress, Elastic properties, Reprints.
Identifiers: Diffraction analysis, Particles.

No abstract available.

N79-19083/1GA PC **A04**/MF **A01**
Virginia Polytechnic Inst. and State Univ., Blacksburg. Dept. of Aerospace and Ocean Engineering.
Analysis of Graphite/Polyimide Rail Shear Specimens Subjected to Mechanical and Thermal Loading.
Final Report.
T. A. Weisshaar, and R. Garcia. Mar 79, 56p
NASA-CR-3106, VPI-E-78-27
Contract NGR-47-004-129

Descriptors: *Composite materials, *Finite element method, *Graphite, *Load tests, *Polyimides, *Shear properties, *Thermal stresses, Differential thermal analysis, Flat plates, Graphs(Charts), Mathematical models, Stress analysis, Thermal expansion.
Identifiers: Finite element analysis, Graphite reinforced composites, Polyimide resins, Reinforced plastics.

For abstract, see STAR 1710

11E. Fibers and Textiles

AD-A065 163/8GA PC **A05**/MF **A01**
Fiber Materials, Inc., Biddeford, ME.
Improved Graphite Fiber.
Final rept. Jul 77-Jun 78,
Roger Pepper, David Jarmon, Dan Nelson, and Janet Hotham. 12 Sep 78, 81p Rept no. FM-91178-1
Contract DAAK70-77-C-0155

Descriptors: *Graphited materials, *Fibers, *Industrial research, Boron, Tensile strength, Experimental data, Mechanical properties, Industrial production.
Identifiers: *Graphite fibers, Carbon fibers.

The successful demonstration of the strengthening of high modulus graphite fibers by coating and alloying with boron was achieved on this program. Fiber strengths as high as 473 x 1000 psi at 63 million psi modulus have been obtained. An arc-plasma heating process, with temperatures in excess of 3000 C, has been utilized for strengthening graphite fiber. Chemical treatments on graphite fibers were employed to increase their strengths. Successful intercalation of Br2, IC1, FeC13 and MoC15 into graphite fibers was demonstrated with no significant improvement in strengths observed. The application of a small diameter PAN fiber to produce graphite fibers of much superior properties was initiated. Design plans have been drawn up for construction of a pilot plant capable of processing one pound per hour of improved graphite fibers. (Author)

AD-A065 488/9GA PC **A04**/MF **A01**
Army Engineer Waterways Experiment Station, Vicksburg, MS.
True Load-Deformation Relationships for Coated and Uncoated Fabrics.
Final rept. Feb 77-Sep 78,
Timothy W. Vollor. Dec 78, 57p Rept no. WES-MP-S-78-17

Descriptors: *Fabrics, *Test methods, Coatings, Civil engineering, Mechanical properties, Standards, Tensile properties, Elongation, Tearing.
Identifiers: Physical properties.

A baseline survey was prepared on the application of fabrics in civil engineering with an emphasis on the testing techniques by which physical and mechanical properties of fabrics and/or membranes are determined. It was found that several characteristics are required to fully evaluate a fabric's potential for use in civil engineering construction. Standard test methods used with fabrics are not always adequate for this evaluation, and new tests are being developed to evaluate fabrics under various specific conditions. These tests should be simple to perform, provide useful information, and be accepted as reasonable by both manufacturer and user. Both new test methods developed by other researchers and test methods presently being used for evaluating fabrics and/or membranes are discussed. Several selected load versus elognation test methods were evaluated in the laboratory. For this evaluation, 10 fabric materials were selected. An attempt was made to select fabrics with a range of physical properties that would enable a better evaluation of the test methods. The Capstan linear variable differential transformer (LVDT) test, a unidirectional test method designed to accurately describe the load versus elongation relationships of both low and high-strength fabrics and/or membranes, was devised. The results of the evaluation indicated that the Capstan test gives representative load versus elongation data for woven fabrics.

11F. Metallurgy and Metallography

AD-A064 854/3GA PC **A03**/MF **A01**
Illinois Univ. at Urbana-Champaign. Dept. of Metallurgy and Mining Engineering.
Hydrogen Related Failure Mechanisms in Metals.
Technical rept.,
H. K. Birnbaum. Dec 78, 37p
Contract N00014-75-C-1012, Grant NSF-DMR78-24219

Descriptors: *Hydrogen embrittlement, *Metals, *Hydrogen, *Failure(Mechanics), *Literature surveys, Fracture(Mechanics), Metallurgy.

The literature pertaining to hydrogen related failure of metals is reviewed. Emphasis is placed on those experiments which relate directly to the failure mechanisms. The possible failure mechanisms are discussed and evaluated. (Author)

AD-A064 856/8GA PC **A04**/MF **A01**
Rockwell International, Thousand Oaks, CA. Science Center.
Selected Bibliography of Atmospheric Corrosion.
Final rept. 1 Apr 75-29 Dec 78 on Task 6,
F. Mansfeld. Jan 79, 60p Rept no. SC5030.7FR
Contract N00014-75-C-0788
See also AD-A063 922.

Descriptors: *Corrosion, *Bibliographies, Corrosion inhibition, Exposure(General), Oxidation, Humidity, Moisture, Temperature, Rust(Oxidation), Reports, Protective coatings, Salt spray tests, Metals, Electrochemistry.
Identifiers: *Atmospheric corrosion.

During an electrochemical study of atmopsheric corrosion phenomena funded by the Office of Naval Research, a number of publications related to basic aspects of atmospheric corrosion have been collected. The more important papers are enclosed in this bibliography in a chronological manner. If an abstract was provided by the authors, it is included. This collection of papers on atmospheric corrosion is by no means complete. Many publications related to organic coatings, exposure tests, etc. have not been included since they did not contain information of basic nature. This bibliography is part of the Final Report prepared by F. Mansfeld, principal investigator, for the Office of Naval Research.

AD-A064 911/1GA PC **A07**/MF **A01**
Liverpool Univ., (England). Dept. of Metallurgy and Materials Science.
High Temperature Oxidation and Corrosion of In-Situ Composite Alloys.
Final rept. 1 Jan 75-31 Dec 77,
D. M. Johnson, D. P. Whittle, and J. Stringer. Oct 78, 132p AFML-TR-78-137
Grant AFOSR-75-2785

Descriptors: *Superalloys, *Eutectic composites, Tantalum compounds, Carbides, Chromium compounds, High temperature, Oxidation reduction reactions, Corrosion, Nickel alloys, Niobium alloys, Aluminum alloys, Fiber reinforced composites.
Identifiers: Oriented fiber composites, Metal matrix composites, Ceramic fibers, Chromium carbides, Tantalum carbides, Oxidation.

The high temperature oxidation and corrosion behavior of a number of direction-ally solidified eutectic alloys were studied in the temperature range 1600-2000 Degrees F; these include gamma/gamma prime-delta alloys and alloys containing Tantalum Carbide or Cr Sub 7 C sub 3 fibers. With all the alloys the important factor appears to be whether or not a fiber-free zone is estabiished between the surface scale and the alloy eutectic structure, and this in turn depends in a complex way on temperature, the degree of alignment and spacing of the eutectic, and the composition of the alloy. Tantalum Carbide fibers are very oxidation prone, and alloys containing this phase have poor overall resistance; Cr sub 7 C sub 3 or delta (Ni sub 3 Nb) are not as detrimental. (Author)

AD-A064 974/9GA PC **A03**/MF **A01**
Naval Research Lab., Washington, DC.
The Corrosion Behavior and Rutherford Backscattering Analysis of Palladium Implanted Titanium.
Final rept.,
G. K. Hubler, and E. McCafferty. Nov 78, 32p

Descriptors: *Palladium, *Titanium, *Corrosion, Ion implantation, Ion beams, Sulfuric acid, Backscattering, Concentration(Chemistry), Electrochemistry, Polarization, Potentiostatic techniques, Xenon.

The corrosion behavior of Pd implanted Ti in boiling 1 Molar sulfuric acid has been investigated by means of high resolution Rutherford backscattering (RBS) profiles of the Pd concentration as a function of corrosion time, and by electrochemical methods consisting of corrosion potential versus time curves and potentiostatic polarization data. Employing ion-implanted Xe as a surface 'marker,' absolute corrosion rates were determined by RBS analysis and compared to corrosion rates determined from the polarization curves. The rate of Ti dissolution is found to be reduced by about three orders-of-magnitude for Pd implanted samples. The corrosion potential-time curves and high resolution RBS data both show that soon after immersion, and Pd surface concentration rises to 20 atomic percent because of preferential dissolution of Ti and that the Pd is retained in the surface for corrosion time of up to 9 hr. The steady state corrosion potential of implanted samples is close to that of pure Pd and 800 mV anodic with respect to the corrosion potential of pure Ti. The protection is explained by the fact that the mixed electrode potential is more noble than the critical potential for passivity of Ti, resulting in a markedly reduced dissolution rate. (Author)

AD-A064 993/9GA PC **A05**/MF **A01**
Pratt and Whitney Aircraft Group, West Palm Beach, FL. Government Products Div.
Titanium Alloy Ignition and Combustion.
Final rept. 30 Sep 77-30 Sep 78,
V. G. Anderson, and B. A. Manty. 30 Oct 78, 99p
PWA-FR-10520, NADC-77153-30
Contract N62269-77-C-0481

Descriptors: *Titanium alloys, *Ignition, *Combustion, Compressors, Gas turbines, Thickness, Laser beams, Temperature, Pressure, Air flow, Burning rate, Test methods, Test facilities.
Identifiers: Titanium alloy 8Al 1Mo Iv, Titanium alloy 6Al 6Mo 25N 4Zr, Titanium alloy 13Al 11Cr 13V, Titanium alloy 13.5 Al 21.5 Nb, Titanium alloy 13Cu.

The objective of this program was to determine the relative ignition and combustibility characteristics of titanium alloys. Nine titanium alloys were subjected to a laser ignition source at each of two conditions of temperature, pressure, and airsteam velocity typical of gas turbine engine compressor environments. In addition a concurrent study was conducted on the effect of Ti 8-1-1 specimen thickness on combustion parameters. All alloys ignited but two(Ti 20Ni and Ti 13Cu) failed to sustain combustion. Burn severity and chordwise and spanwise burn velocities were determined for those alloys which burned. Thickness was found to influence these burn parameters. The extent of this influence was shown to have a high degree of correlation. (Author)

AD-A064 994/7GA PC **A04**/MF **A01**
Army Materials and Mechanics Research Center, Watertown, MA.
Determination of Fracture Stress and Effective Crack Tip Radius from Toughness (KIC) and Yield Strength (Y).
Final rept.,
Reinier Beeuwkes, Jr., Anna M. Hansen, and Robert T. Tremblay. Oct 78, 59p Rept no. AMMRC-TR-78-44
Original contains color plates: All DDC and NTIS reproductions will be in black and white.

Descriptors: *Fracture(Mechanics), Crack propagation, Toughness, Yield strength, Graphs, Radius(Measure), Metallurgy, Surface chemistry, Tables(Data), Elastic properties, Stress analysis.

Extensive analysis was completed of available fracture mechanics and strength data and graphical procedures developed to relate effective crack tip radius to inherent materials properties. Fracture stress and effective crack tip radius are estimated from a log-log plot of K sub IC and corresponding yield strength using transparent overlays supplied with the paper. Examples are employed to illustrate the method. The influence of testing temperature, metallurgical structure, chemistry, and the existence of an effective crack tip radius are discussed. Associated tables are included relating two dimensionless parameters involving toughness, yield strength, crack tip radius, and peak stress at any elasticity containing a degree of yielding consistent with valid toughness data. (Author)

AD-A065 073/9GA PC **A03**/MF **A01**
Stanford Univ., CA. Dept. of Materials Science and Engineering.
The Development of Ultrafine, Superplastic Structures in White Cast Irons.
Technical rept.,
J. Wadsworth, L. E. Eiselstein, and O. D. Sherby. Nov 78, 32p
Contract N00014-75-C-0662

Descriptors: *Iron, *Casting alloys, *Plastic properties, Fine grained materials, Forging, Rolling(Metallurgy), Hot working, Heat treatment, Industrial production, Carbon, Microstructure, Stress strain relations.
Identifiers: *White iron, Thermomechanical treatment, Grain structure.

White case irons are not normally considered malleable. Recent work at Stanford, however, has demonstrated that these materials can in fact be hot forged, hot rolled and warm rolled. Further, such a series of thermomechanical treatments refines the as-cast structure so as to impart unusual and highly beneficial properties to the cast irons. In particular, the worked, white cast irons are found to be superplastic and there is a great improvement in room temperature properties. This processing procedure may therefore have significant technological applications. (Author)

AD-A065 083/8GA PC **A02**/MF **A01**
Carnegie-Mellon Univ., Pittsburgh, PA. Dept. of Metallurgy and Materials Science.
A Quantitative Analysis of Hydrogen Trapping.
Technical rept.,
G. M. Pressouyre, and I. M. Bernstein. 2 Mar 78, 14p Rept nos. TR-10, CMU-036-099-10
Contract N00014-75-C-0265
Availability: Pub. in Metallurgical Transactions A, v9A p1571-1580 Nov 78.

Descriptors: *Iron alloys, *Titanium alloys, *Carbon alloys, *Hydrogen embrittlement, Quantitative analysis, Reprints.
Identifiers: Trapping.

No abstract available.

AD-A065 119/0GA PC **A02**/MF **A01**
Rensselaer Polytechnic Inst., Troy, NY. Dept. of Materials Engineering.
Fretting Fatigue of a Medium Carbon Steel.
Final rept. 1 Nov 75-31 Oct 78,
D. J. Duquette. 1 Jan 79, 11p ARO-12554.4-MS
Contract DAAG29-76-C-0006

Descriptors: *Carbon steels, Fretting, Corrosion, Fatigue(Mechanics), Cracking(Fracturing).

Contacting metal surfaces subjected to pressure and relative motion suffer from a phenomenon known as fretting corrosion. When one of the two surfaces is also subjected to cyclic stress this phenomenon can lead to premature fatigue crack initiation and is known as fretting fatigue. Important variables in this process are the magnitude of relative displacement, contact pressure, frequency, relative hardness of contacting surfaces, intrinsic fatigue resistance and possibly environment and temperature. (Author)

AD-A065 143/0GA PC **A03**/MF **A01**
Battelle Columbus Labs., OH.
Pulsed Laser Interactions with Titanium-Vanadium Alloys.
Final rept. 14 Apr 75-8 Aug 78,
A. H. Clauer, and B. P. Fairand. 15 Feb 79, 28p ARO-12794.2-MS
Grants DAHC04-75-G-0115, DAAG29-77-G-0187

Descriptors: *Titanium alloys, *Pulsed lasers, Interactions, Shock(Mechanics), Vanadium alloys, Tensile strength, Magnetic properties, Microstructure, Pressure, Acoustic impedance, Twinning(Crystallography), Dislocations, Metastable state, Heat treatment.
Identifiers: Hardening(Materials).

The effects of a high energy pulsed laser induced shock wave on the properties and microstructure of a series of titanium vanadium alloys were investigated. The peak pressure of the shock waves was increased by using high acoustic impedance back-up plates and by splitting the laser beam to shock two opposite sides of the specimen simultaneously. The hardness and strength of the alloys were increased up to 10 percent after laser shocking. The shock hardening was attributed to shock induced dislocations and twinning, and possibly strain transformed metastable beta depending on alloy composition and heat treatment. The magnetic susceptibility of the alloys was unaffected by laser shocking. (Author)

AD-A065 150/5GA PC **A04**/MF **A01**
Lockheed Missiles and Space Co., Inc., Palo Alto, CA. Palo Alto Research Lab.
A Fundamental Study of Flow and Fracture in Beryllium.
Final rept. 1 Jun 76-31 Oct 78,
Donald Webster. Dec 78, 62p LMSC/D633363, ARO-13387.2-MS
Contract DAAG29-76-C-0051

Descriptors: *Beryllium alloys, *Fracture(Mechanics), Powder metals, Recrystallization, Grain size, Grain boundaries, Dislocations, Heat treatment, Thermomechanics, Castings, Aluminum alloys, Hot pressing, Microstructure, Impact strength, Tensile stress.

The effect of thermomechanical treatments on the grain size of HIP beryllium powder block and cast beryllium alloys has been studied. A grain-size controlled-fracture mode change has been observed in both powder-source and ingot-source beryllium. The mechanism of recrystallization in heavily deformed beryllium has been observed to be the in situ transformation of subgrains to grains by dislocation migration from grain interiors to grain boundaries. Beryllium which has been cold-worked and partly recrystallized to form some very fine grains was found to be much tougher than either unworked material or fully recrystallized material and approached the toughness of high-strength aluminum alloys. In upset-forged beryllium where the texture is similar to that of hot-pressed block, strength, ductility, and toughness were improved by partial recrystallization. The enhancement of ductility and toughness are believed to be a result of grain-boundary sliding in the regions where very fine grains occur. Transmission electron microscopy has been used to show the early stages of grain-boundary fracture and the grain-boundary dislocation structure preceding fracture. This work indicates that the use of rapidly cooled beryllium powder rather than impact ground powder would allow a further increase in ductility and toughness. (Author)

AD-A065 180/2GA PC **A06**/MF **A01**
Southwest Research Inst., San Antonio, TX.
Research on Growth of Microcracks in Nickel-Base Superalloys.
Final rept. Jul 76-Jul 78,
Thomas S. Cook, James Lankford, and G. P. Sheldon. Sep 78, 103p SWRI-02-4601, AFML-TR-78-133
Contract F33615-76-C-5242

Descriptors: *Superalloys, *Nickel alloys, *Crack propagation, Microcracking, Fractography, Fatigue(Mechanics), Electron microscopes, Powder metallurgy, Test methods, High temperature, Microstructure, Stress concentration, Plastic deformation, Mathematical prediction.
Identifiers: Nickel alloy In-100, Heat resistant alloys.

The growth of very small, 0.06-0.15 mm, fatigue cracks in a powder metallurgy nickel-base superalloy, IN-100, was studied. Tests were conducted at room temperature and at 650 C. The crack growth rates were measured by means of a 600X microscope which allowed in situ crack length measurement, even at elevated temperature. The interaction of the crack and the material microstructure was observed in a fatigue loading stage which operated in the Scanning Electron Microscope. A technique for experimentally determining stress intensity factors was also developed.

AD-A065 185/1GA PC **A02**/MF **A01**
Michigan Technological Univ., Houghton. Dept. of Metallurgical Engineering.
Effects of Shock Loading Variables on Shock Wave Strengthening of Metals.
Final rept. no. 1, 1 Oct 75-30 Nov 78,
Donald E. Mikkola. 12 Feb 79, 11p ARO-13183.2-MS
Grants DAAG29-76-G-0054, DAAG29-78-G-0005

Descriptors: *Copper alloys, *Germanium alloys, *Shock(Mechanics), Loads(Forces), Microstructure, Pulse rate, Pulsed lasers, Twinning(Crystallography), Plastic deformation, Dislocations, Pulse amplitude, Flyer plates, Time dependence.
Identifiers: Hardening(Materials).

The purpose of this research has been to determine the effects of shock loading variables on the microstructure and properties of shock hardened materials and to compare laser-induced shock pulse effects with those associated with mechanically introduced shock pulses. Of particular interest has been the extension of the study of pulse duration effects to very short durations; e.g., less than 0.01 micro second. Most earlier work had been done with pulse durations of 1 micro second or greater, where, as shown by the current study, the effects are time-saturated. In addition to measurements of the hardening effects, the shock-induced substructures have been characterized in detail with x-ray diffraction and transmission electron microscopy. (Author)

AD-A065 228/9GA PC **A02**/MF **A01**
Cincinnati Univ., OH. Dept. of Aerospace Engineering and Applied Mechanics.
Some Effects of Temperature on the Erosion of Metals,
Nahum Gat, and Widen Tabakoff. 8 Dec 77, 11p ARO-10223.14-E
Grant DA-ARO-D-31-124-71-G154
Availability: Pub. in Wear, v50 p85-94 1978.

Descriptors: *Aluminum alloys, *Stainless steel, *Titanium alloys, *Mechanical properties, Erosion, Temperature, Reprints.
Identifiers: Aluminum alloy 2024, Titanium alloy 6Al 4V.

No abstract available.

AD-A065 362/6GA PC **A02**/MF **A01**
Rice Univ., Houston, TX. Dept. of Mechanical Engineering.
Thermodynamic and Kinetic Properties of Solute Atoms in Interstitial Solid Solutions.
Final rept. 15 Nov 75-15 Nov 78,
Rex B. McLellan. 1 Jan 79, 15p ARO-13038.4-MS
Grants DAAG29-78-G-0017, DAAG29-76-G-0083

Descriptors: *Solid solutions, *Interstitial, Diffusion, Hydrogen, Adsorption, Iron, Palladium, Electronic states, Elastic properties, Lattice dynamics, Thermal properties, Mobility.

Measurements of the elastic properties of the Group V metals from room temperature up to 2000 K have shown that the lattice softening effect is not responsible for non-Arrhenius behavior seen in the diffusion of interstitial atoms through these metals. Work on the Fe-C and Pd-H systems has shown that the volume changes associated with the insertion of a solute atom has a second-order effect on the mobility of the interstitial solute, but has a significant effect on the thermodynamic properties. The temperature variation of the H-solubility in a series of Mo-Nb solvents has been measured. The resulting enthalpies of solution show a variation with the electronic density of states at the Fermi surface which is not in accord with the screened proton model for H-metal systems. The diffusivity of hydrogen in several noble metals has been measured using the permeability time-lag technique. (Author)

PB-292 929/7GA PC **A02**/MF **A01**
Kawasaki Steel Corp., Tokyo (Japan). Technical Development Dept.
Heavy Plate of Quenched and Tempered Steel with 80 kg/mm2 Tensile Strength.
Technical bulletin,
Tokushi Funakoshi, Tohoru Yasuda, Shin-ichi Aoki, Jun-ichiro Tsuboi, and Katsuro Inomata. Nov 78, 15p KAWASAKI STEEL-TB-6

Descriptors: *Metal plates, *Structural steels, Bridges(Structures), Mechanical properties, Manufacturing, High strength steels, Japan.

Quenched and tempered high tensile strength steel plates with large thickness are now widely used for civil engineering structures such as long span bridges, penstocks, and industrial machines. Good weldability, high notch toughness, and homogeneous mechanical properties in the thickness direction are required for these plates. This paper describes fundamental experiments, manufacturing process, and mechanical properties of HT-80 heavy plates for Osaka Harbor Bridge in Japan.

PB-293 976/7GA PC **A02**/MF **A01**
Chamber of Foreign Trade of the German Democratic Republic, Berlin.
The German Democratic Republic's Economic/Technological Congress in the U.S.A. (1st). Lecture 16. New Developments in the GDR in Producing High-Alloy Steels in a 10-Ton Plasma-Beam Furnace (New York and Chicago only - Will Not Be Held in Los Angeles),
Franz Mueller. 1978, 13p
See also Lecture 15, PB-293 975. Prepared by Ministry of Ore Mining, Metallurgy and Potash, Berlin (German D.R.). Presented at 'Days of Engineering of the GDR'.
Also available in set of 16 reports PC E19, PB-293 960-SET.

Descriptors: *Metallurgical furnaces, *Steel making, East Germany, Melting furnaces, Technology.
Identifiers: *Plasma arc furnaces.

The report is one from a series of lectures presented in the United States during 1978. Each paper discusses, briefly, a particular topic detailing either industrial development or economic growth in the German Democratic Republic.

11H. Oils, Lubricants, and Hydraulic Fluids

AD-A065 314/7GA PC **A02**/MF **A01**
Wayne State Univ., Detroit, MI. Dept. of Mathematics.
On the Roughness Effect in Hydrodynamic Lubrication,
P. L. Chow, and E. A. Saibel. 30 Jun 77, 6p ARO-12360.7-M
Grant DAAG29-76-G-0141
Availability: Pub. in the Jnl. of Lubrication Technology, v100 n2 p176-180 Apr 78.

Descriptors: *Lubrication, *Surface roughness, Hydrodynamics, Loads(Forces), Reynolds number, Reprints.

No abstract available.

N79-19346/2GA PC **A21**/MF **A01**
Midwest Research Inst., Kansas City, MO.
Lubrication Handbook for the Space Industry. Part A: Solid Lubricants. Part B: Liquid Lubricants.
Final Report.
Sep 78, 497p NASA-CR-161109
Contract NAS8-31715

Descriptors: *Aerospace industry, *Lubricating oils, *Solid lubricants, Chemical properties, Handbooks, Missiles, Spacecraft.
Identifiers: Lubricants.

For abstract, see STAR 1710

PATENT-4 134 843 Not available NTIS
Department of the Navy Washington DC
Deuterated Lubricant.
Patent,
Neal D. Rebuck, and A. Conte, Jr. Filed 7 Mar 77, patented 16 Jan 79, 5p AD-D005 812/3, PAT-APPL-775 238
Supersedes PAT-APPL-775 238-77, AD-D003 996.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $0.50.

Descriptors: *Patents, *Lubricants, *Hydrocarbons, *Deuterium compounds, Mixtures, Bearings, Performance(Engineering), Life expectancy, Oxidation resistance.
Identifiers: PAT-CL-252-28.

This patent relates to a mixture of nondeuterated and partially or fully deuterated hydrocarbon lubricants. Such a mixture exhibits substantially improved bearing performance, life, and oxidation resistance, without having fully deuterated the entire lubricant. (Author)

11I. Plastics

AD-A064 859/2GA PC **A04**/MF **A01**
Naval Surface Weapons Center, White Oak Lab., Silver Spring, MD.
Polyurethane Foams for Aircraft Shock Mounts. II. Polybutadiene Based Foams.
Progress rept. Oct 77-Jul 78,
Hubert J. Booth, and James V. Duffy. 1 Nov 78, 72p Rept no. NSWC/WOL/TR-78-162
See also AD-A061 482.

Descriptors: *Polybutadiene, *Polyurethane resins, *Aircraft equipment, Vibration isolators, *Shock absorbers, Mounts, Flexible materials, *Foam, Military applications, Specifications, Polyethers, Catalysts, Concentration(Chemistry), Density, Compressive properties, Hydrolysis, Hydraulic fluids.

The objective of this program was to develop flexible foam systems which meet the specifications outlined in MIL-F-81334B (AS). This report deals with the results obtained from a series of foams based on polybutadient polyol and its combinations with various types of polyether polyols. Polyol ratios, surfactant type and concentration, and catalyst type and concentration were evaluated to determine their influence on foam properties. Those foams demonstrating the most promise were measured for density, compression set, rebound, tensile strength, elongation, hydraulic fluid and hydrolytic resistance, porosity and vibration damping. (Author)

AD-A065 308/9GA PC **A02**/MF **A01**
Massachusetts Univ., Amherst. Polymer Research Inst.
A Small-Angle X-Ray Scattering Study of Blends of Isotactic and Atactic Polystyrene,
Frank P. Warner, William J. MacKnight, and Richard S. Stein. 11 Jul 77, 15p ARO-12942.10-C
Grant DAAG29-75-G-0135
Availability: Pub. in Jnl. of Polymer Science. Part A-2: Polymer Physics, v15 p2113-2126 1977.

Descriptors: *X ray scattering, *Polystyrene, Crystal structure, Spherulites, Reprints.

No abstract available.

AD-A065 377/4GA PC **A02**/MF **A01**
Massachusetts Inst. of Tech., Cambridge. Dept. of Materials Science and Engineering.
Characterization of Polymer Deformation and Fracture,
David K. Roylance. 1978, 14p ARO-13630.2-MSX
Contract DAAG29-76-C-0044
Availability: Pub. in Applications of Polymer Spectroscopy, v13 p207-219 1978.

Descriptors: *Polymers, *Deformation, *Fracture(Mechanics), Kinetic theory, Mathematical models, Electron spin resonance, Reprints.

No abstract available.

AD-A065 394/9GA PC **A02**/MF **A01**
Massachusetts Univ., Amherst.
Light Scattering Studies of Mixtures and Fractions of Linear Polyethylene,
L. Mandelkern, S. Go, D. Peiffer, and R. S. Stein. 28 Oct 76, 11p ARO-12942.11-C
Grants DAAG29-75-G-0135, NSF-DMR75-05004
Prepared in cooperation with Florida State Univ., Tallahassee, under Grant NSF-DMR72-03052.
Availability: Pub. in Jnl. of Polymer Science: Polymer Physics Edition, v15 p1189-1198, 1977.

Descriptors: *Polyethylene, *Polymeric films, *Light scattering, Mixtures, Fractionation, Molecular structure, Reprints.

No abstract available.

PAT-APPL-954 674/GA PC **A02**/MF **A01**
Department of the Navy Washington DC
Process for Bonding with Polyethylene Encapsulant.
Patent Application,
C. E. Vautrain, Jr. Filed 26 Oct 78, 15p AD-D005 833/9
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

Descriptors: *Patent applications, *Polyethylene, *Encapsulation, *Bonding, Processing, Copolymers, Plastic coatings, Fluidized bed processes, Injection molding.

A process is provided for producing a bond at the interface between an encapsulant and the object to be encapsulated. A selected resin with curing agent is coated and oven cured on the object to be encapsulated, and thereafter a copolymer coating is applied to the assembly in a fluidized bed and the assembly is oven cured. The resulting product is then injection molded with a suitable polyethylene material. (Author)

PATENT-4 132 842 Not available NTIS
Department of the Navy Washington DC
Silicon-Phthalocyanine-Siloxane Polymers.
Patent,
Kenneth J. Wynne, and John B. Davison. Filed 23 Feb 78, patented 2 Jan 79, 6p AD-D005 807/3, PAT-APPL-880 514
Supersedes PAT-APPL-880 514-78, AD-D004 791.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $0.50.

Descriptors: *Patents, *Polymers, Synthesis(Chemistry), Silicon compounds, Phthalocyanines, Siloxanes, High tempeature, Polyimide resins, Epoxy resins, Dyes, Coatings.
Identifiers: PAT-CL-526-33, *Polymerization.

A silicon-phthalocyanine-siloxane polymer, having the formula wherein Pc is a phthalocyanine nucleus, Ph is a phenyl group, n is an integer from 1 to 8, and x is an average value up to 20, is prepared by a method includinbg a reaction of a phthalocyanine-silicon-disilanol with a bis(ureido) amino) silane or a bis(dialkylamino) siloxane. These polymers are useful as strengthening agents for high-temperature resins, such as polyimides, poly(phthalocyanines), or epoxies, and as coatings or dyes.

PATENT-4 134 848 Not available NTIS
Department of the Navy Washington DC
Composite for Improved Stripline Board Material.
Patent,
Arnold Adicoff, C. Martin, and Rena Y. Yee. Filed 28 Jun 76, patented 16 Jan 79, 4p AD-D005 813/1, PAT-APPL-700 279
Supersedes PAT-APPL-700 279-76, AD-D002 888.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $0.50.

Descriptors: *Patents, *Glass, *Microspheres, *Polymeric films, Matrix materials, Bonding, Polyethylene, Polypropylene, Polystyrene, Silanes, Mixtures.
Identifiers: PAT-CL-252-63.2.

This patent pertains to a stripline board material of hollow glass microspheres chemically bonded to a coating material and physically held in a polymeric matrix, preferably homo- or copolymers of ethylene, propylene, and/or styrene. The coating material is a difunctional silane with one functional group bound to the glass and the other bound either to the matrix or to a copolymer of a structure similar to the structure of the matrix. In the latter case, the sphere-silane-copolymer forms an intimate mixture with the matrix. (Author)

PATENT-4 142 037 Not available NTIS
Department of the Air Force Washington DC
Readily Curable Fluorocarbon Ether Bibenzoxazole Polymers.
Patent,
Robert C. Evers, and Tonson Abraham. Filed 21 Dec 77, patented 27 Feb 79, 10p AD-D005 823/0, PAT-APPL-863 026
Supersedes PAT-APPL-863 026-77.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for for-

eign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $0.50.

Descriptors: *Patents, *Heat resistant plastics, *Fluoropolymers, *Benzoxazoles, *Synthesis(Chemistry), *Sealing compounds, Aerospace environment, Elastomers, Stability, Hydrolysis, Oxidation resistance.
Identifiers: PAT-CL-528-210.

Thermooxidatively and hydrolytically stable perfluoroalkylene ether bibenzoxazole polymers containing hydrocarbon cure sites are synthesized by the polocondensation of a fluorocarbon bis(o-aminophenol) containing a hydrocarbon moiety and a perfluoroalkylene ether diimidate or dithioimidate ester. The polymers are readily curable to elastomers that are resistant to hydrolysis over a wide use-temperature range. Thus, the polymers are especially suitable for use in aerospace applications where extreme environments are encountered. In particular, the polymers are useful as seals, sealants, and the like.

PB-293 570/8GA PC **A03**/MF **A01**
Research Triangle Inst., Research Triangle Park, NC.
A Study of an Electrodeless Glow Discharge as a Means of Modifying the Surface of Polymers.
Annual rept. 1 Dec 77-30 Nov 78,
N. Morosoff, H. Yasuda, and B. Hill. Feb 79, 41p
NIH-N01-HV-3-2913-6
Contract N01-HV-3-2913

Descriptors: *Glow discharges, *Polymers, *Surface finishing, Blood coagulation, Films.
Identifiers: Blood compatible materials, Biomaterials.

The nature of a plasma polymer will depend on the reactor, location within the reactor where it is deposited and on power and flow rate (W/FM) for a given monomer as well as on the monomer used. The variations in chemical nature of plasma polymers to be found as a function of location and the ratio of power to flow rate (W/FM) are demonstrated for a series of siloxane monomers in two different reactors. It is demonstrated that by judicious selection of location, power and flow rate, identical polymer can be deposited in both reactors using a given monomer. Plasma polymer of tetramethyldisiloxane is deposited inside polyvinyl chloride tubing. The amount of material introduced into water flowing through such tubing in a flex test (peristaltic pump) is reduced in such a coated tubing as compared to the uncoated control.

11J. Rubbers

PAT-APPL-936 431/GA PC **A02**/MF **A01**
Department of the Navy Washington DC
Room Temperature Cured Elastomer.
Patent Application,
Eugene C. Martin, and Arnold Adicoff. Filed 24 Aug 78, 9p AD-D005 831/3
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

Descriptors: *Patent applications, *Curing, *Binders, Elastomers, Room temperature, Propellants, Explosives, Polybutadiene, Hydroxyl radicals, Ethers, Pentadienes, Amines, Dimers.
Identifiers: HTPB propellant ingredient, Hydroxy terminated polybutadiene, *Ether/bis(pentadienyl), *Synthesis(Chemistry).

Hydroxy terminated polybutadiene is reacted with naphtyl-potassium and 1-bromo-2,4-pentadiene in successive steps to form a bis(1,3-pentadienyl ether) derivative. Then the bismaleimide of dimer diamine is added to the polybutadiene derivative whereby a room temperature cure to an elastomer is achieved. (Author)

PAT-APPL-936 433/GA PC **A02**/MF **A01**
Department of the Navy Washington DC
Room Temperature Cured Elastomer.
Patent Application,
Eugene C. Martin, and Arnold Adicoff. Filed 24 Aug 78, 9p AD-D005 832/1
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

Descriptors: *Patent applications, *Curing, *Binders, *Elastomers, Room temperature, Propellants, Explosives, Polybutadiene, Hydroxyl radicals, Ethers, Pentadienes, Amines, Dimers.
Identifiers: HTPB propellant ingredient, Hydroxy terminated polybutadiene, *Snythesis(Chemistry), *Ether/bis(pentadienyl).

Hydroxy terminated polybutadiene is reacted with naphtyl-potassium and 1-bromo-2,4-pentadiene in successive steps to form a bis(1,3-pentadienyl ether) derivative. Then the bismaleimide of dimer diamine is added to the polybutadiene derivative whereby a room temperature cure to an elastomer is achieved. (Author)

12. MATHEMATICAL SCIENCES

12A. Mathematics and Statistics

AD-A064 916/0GA PC **A02**/MF **A01**
Case Western Reserve Univ., Cleveland, OH. Dept. of Mathematics and Statistics.
Bayes Estimates of the Variance of a Normal Population for Prior Conjugate Distributions of Independent Parameters with Application to Estimation in Finite Populations.
Technical rept.,
S. Zacks. 10 Jan 79, 16p Rept no. TR-36
Contract N00014-75-C-0529

Descriptors: *Normal distribution, *Statistical decision theory, Population(Mathematics), Efficiency, Estimates, Analysis of variance, Random variables, Error analysis, Chi square test.
Identifiers: *Bayesian estimation.

A Bayes estimator of the variance of a normal distribution n(mu, sigma-squared), when mu is unknown, is developed for squared-error loss and conjugate priors of independent parameters. In the present study its formula is developed and its relative efficiency is compared with that of the Bayes estimator and with that of the best equivariant estimator. Application of the estimator to the estimation of the variance of a finite population is provided.

AD-A064 946/7GA PC **A13**/MF **A01**
Naval Postgraduate School, Monterey, CA.
Improved Confidence Intervals for the Ratio of the Variances and Standard Deviations from Two Normal Populations.
Master's thesis,
Jeffrey Warren Clouse. Dec 78, 287p

Descriptors: *Normal distribution, *Statistical tests, *Confidence limits, Analysis of variance, Population(Mathematics), Standard deviation, Ratios, Coefficients, Theses.

Shortest confidence intervals for the ration of two variances of normal populations are found as superior alternatives to the widely used equal tail confidence intervals. Extensive tables of high precision are presented which enable the user to easily construct shortest confidence intervals for the ratio of two variances, the ratio of two standard deviations and the shortest unbiased confidence interval for the ratio of two variances. Characteristics and improved performance of the alternative confidence intervals are discussed in detail and illustrated graphically, with an emphasis on the optimal distribution of complementary tail area between the upper and lower tails. (Author)

AD-A064 947/5GA PC **A06**/MF **A01**
Naval Postgraduate School, Monterey, CA.
A Theoretical Study and Computer Search for Binary Sequences Having Specific Autocorrelation Functions.
Master's thesis,
Ioannis Anastasopoulos. Dec 78, 120p

Descriptors: *Sequences(Mathematics), *Autocorrelation, Binary notation, Probability density functions, Matched filters, Computer programs, Kernel functions.
Identifiers: *Binary digits, Computer programming, Theses.

Binary sequences find increasing use in electrical engineering applications of ranging, time measurement and communications. A property of interest in these applications is the autocorrelation function of the binary sequence or pair of sequences. Of the 2 to the nth power possible sequences of length n, only a few have usable autocorrelation function, except for very particular cases. In this report, known properties of complementary sequences are reviewed. Almost complementary sequences are defined and the procedure to obtain them is outlined. A formula is derived for the number of different autocorrelation functions of the 2 to the nth power possible sequences of length n bits. A computer search is implemented with the objective of discovering sequences with desirable autocorrelation functions. (Author)

AD-A064 965/7GA PC **A03**/MF **A01**
Illinois Univ. at Chicago Circle. Dept. of Mathematics.
Repeated Measurements Designs, III.
Interim rept.,
C. Magda, and A. Hedayat. Jul 78, 40p AFOSR-TR-79-0062
Grant AFOSR-76-3050
See also AD-A040 193.

Descriptors: *Experimental design, Statistical tests, Theorems, Estimates, Bias.
Identifiers: Block design.

Repeated measurements designs (RM designs) are experiments in which an experimental unit is exposed to a sequence of treatments during a number of periods(days). A measurement taken on a unit depends on the treatment administered in the previous period (residual effect), the unit itself (unit effect) and the present period (Period effect). In the first part of the paper, after defining the concept of balanced and connected RM design, we proceed in constructing large families of balanced and connected RM designs when the number of periods is less than the number of treatments. In the last section we discuss the structure and the ranks of the C-matrices for direct and residual effects which arise from these designs, as well as the form of the best linear unbiased estimators of estimable contrasts of residual and direct effects. (Author)

AD-A065 011/9GA PC **A08**/MF **A01**
Illinois Univ. at Urbana-Champaign. Dept. of Civil Engineering.
Numerical Integration of Differential Equations Occurring in Two-Point Boundary Value Problems.
Technical rept.,
Rodger B. Jackson, and Arthur R. Robinson. Jan 79, 153p Rept nos. SRS-458, UILU-ENG-78-2027
Contract N00014-75-C-0164
Doctoral thesis.

Descriptors: *Boundary value problems, *Numerical integration, Solutions(General), Computer programs, Shells(Structural forms), Modulus of elasticity, Theses.
Identifiers: *Two point boundary value problems.

An accurate procedure is described for numerically solving two-point boundary value problems which contain growing solutions. The procedure involves the process of reducing the order of a differential equation when one solution is known. Two applications of the procedure are given, a fourth order differential equation with two growing solutions and a system of eighth order differential equations of motion for a hemispherical shell. In both examples before the procedure is started, the equations are rewritten as a system of first order differential equations. It was found that when solving two-point boundary value problems by the reduction of order method, first order differential equations were generally easier to work with than higher order differential equations. For both applications a computer program was developed to solve the system of differential equations. (Author)

AD-A065 019/2GA PC **A03**/MF **A01**
Stanford Univ., CA. Dept. of Operations Research.
Estimating the Tails of a Distribution of Known Form.
Technical rept.,
Ingram Olkin. Dec 78, 41p Rept no. TR-191
Contract N00014-75-C-0561

Also available as TR-138 Stanford Univ., CA. Dept. of Statistics.

Descriptors: *Statistical distributions, *Probability density functions, Multivariate analysis, Normal distribution, Bias, Estimates, Special functions(Mathematical), Reliability, Confidence level, Weibull density functions.
Identifiers: Jackknife method, Gamma density functions.

This paper provides a survey of methods of estimating the tails of a distribution of known form. Examples where the tails are important are cited. The estimation procedures discussed are conditional expectations, transform theory, ancillary statistics, jackknife, location-scale parameter families. The distributions considered are the normal (in particular the multivariate normal distribution), the gamma distribution and several discrete distributions. (Author)

AD-A065 055/6GA PC **A04**/MF **A01**
Naval Underwater Systems Center, New London, CT. New London Lab.
Singular Integrals and their Evaluation.
Technical rept.,
Phillip B. Abraham. 22 Jan 79, 63p Rept no. NUSC-TR-6015

Descriptors: *Integrals, Complex variables, Solutions(General), Analytic functions, Convergence, Laplace transformation, Fourier series.
Identifiers: *Singular integral equations, Delta function.

In this work, integrals with simple or multiple poles which are located on the path of integration are systematically treated. It is shown that with each such integral an infinite set of values can be associated. Since the Principal Value, introduced by Cauchy, plays a key role in the subject, a detailed discussion of this concept is included, and a variety of methods for its explicit evaluation are presented. Various Plemelj formulas are also derived. An important feature, that may well be novel in this context, is a delta-function interpretation of the associated integrands, and its subsequent implications. Examples, related to cases frequently met in applications, are treated in detail in several appendices. (Author)

AD-A065 056/4GA PC **A02**/MF **A01**
Stanford Univ., CA. Dept. of Statistics.
Limit Probabilities for Critical Age Dependent Branching Processes with Immigration.
Technical rept.,
Howard J. Weiner. 15 Jan 79, 22p Rept nos. TR-266, TR-27
Contract N00014-76-C-0475, Grant DAAG29-77-G-0031

Descriptors: *Probability distribution functions, *Cells(Biology), Life expectancy, Time dependence, Integral equations, Eigenvectors.
Identifiers: Branching processes.

Let Z sub O(t), N sub O (t) denote, respectively, the number of cells alive at t and the total progeny born by t in a process with a random number of new cells introduced at renewal epochs, each new cell initiating a critical age-dependent branching process. As t approaches infinity, the forms of P(Z sub O (t) = k) and P(N sub O (t) = k) are obtained for k = 1,2,... and k = 0,1,2,..., respectively. A multi-dimensional version and extension are indicated.

AD-A065 104/2GA PC **A07**/MF **A01**
Stanford Univ., CA. Dept. of Statistics.
On Testing the Equality of Two Proportions.
Technical rept.,
David Berengut, and Albert John Petkau. 8 Feb 79, 142p Rept nos. TR-267, TR-28
Contract N00014-76-C-0475, Grant DAAG29-77-G-0031

Descriptors: Binomials, *Distribution functions, Statistical tests, Ratios, Computer programs, Tables(Data).
Identifiers: Hypothesis testing.

In a recent letter (The American Statistician, May 1977, p. 97), Robbins raises the question of which of two procedures, the commonly-used one and an alternative one, is better for testing the equality of two binomial proportions. In an attempt to answer the question, both asymptotic and extensive exact calculations are performed. The results show that the usual procedure is superior in attaining nominal significance levels but that the alternative procedure is generally, though not uniformly, superior in power. Several other procedures are also considered briefly. (Author)

AD-A065 134/9GA PC **A02**/MF **A01**
Texas Tech. Univ., Lubbock. Dept. of Electrical Engineering.
Resolution Space, Networks, and Non-Self-Adjoint Spectral Theory.
Final rept.,
R. Saeks. Jan 79, 7p AFOSR-TR-79-0040
Grant AFOSR-74-2631

Descriptors: *Linear systems, *Hilbert space, Operators(Mathematics), Signal processing, Networks, Fourier analysis, Kernel functions, Control theory.
Identifiers: Nyquist diagrams, Wiener-Hopf equations, Systems theory.

The results of a five year study directed at the formulation of mathematical foundations for a theory of linear systems defined in Hilbert space are summarized. Since the classical Hilbert space structure does not include a time concept, the theory has been formulated in a resolution space setting, a Hilbert space, to which a time concept has been axiomatically adjoined. The work has included a study of the underlying mathematics of resolution space, applications to stability theory, optimal stochastic systems design, and multidimensional systems. (Author)

AD-A065 139/8GA PC **A02**/MF **A01**
Desmatics, Inc., State College, PA.
Tolerance Limits and Variables Sampling Plans: Some Power Calculations for the Normal and Lognormal Distributions.
Technical rept.,
Terry L. King, and Dennis E. Smith. Feb 79, 23p Rept no. TR-106-7
Contract N00014-75-C-1054

Descriptors: *Statistical distributions, *Confidence limits, Statistical samples, Normal distribution, Tolerance, Hypotheses, Estimates.
Identifiers: Normal density functions, Lognormal density functions.

In this technical report, tables for the power of a one-sided statistical hypothesis test are presented for the situation in which the statistic is distributed as a noncentral t under both the null and alternative hypothesis. Specifically, power and sample size problems are considered for a one-sided tolerance limit and for a variables sampling plan. Examples are also included to illustrate how these tables can be used in hypothesis testing situations and for determining sample size requirements in some estimation procedures. (Author)

AD-A065 195/0GA PC **A02**/MF **A01**
Brown Univ., Providence, RI. Div. of Applied Mathematics.
Rates of Convergence for Stochastic Approximation Type Algorithms.
Interim rept.,
Harold J. Kushner, and Hai Huang. Oct 78, 22p AFOSR-TR-79-0084
Grant AFOSR-76-3063

Descriptors: *Stochastic control, *Adaptive control systems, Identification systems, Algorithms, Weak convergence, Sequences(Mathematics), Analysis of variance, Approximation(Mathematics), Matrices(Mathematics).
Identifiers: Borel sets, Stochastic approximation.

No abstract available.

AD-A065 197/6GA PC **A02**/MF **A01**
Purdue Univ., Lafayette, IN. Dept. of Statistics.
Estimating the Mean of a Normal Distribution with Known Coefficient of Variation,
Leon Jay Gleser, and John D. Healy. Feb 75, 7p AFOSR-TR-77-0297
Grant AFOSR-72-2350
Availability: Pub. in Jnl. of the American Statistical Association, v71 n356 p977-981 Dec 76.

Descriptors: *Statistical distributions, *Normal distribution, Standard deviation, Statistical decision theory, Estimates, Reprints.
Identifiers: Mean.

No abstract available.

AD-A065 198/4GA PC **A02**/MF **A01**
Purdue Univ., Lafayette, IN. Dept. of Statistics.
A Canonical Representation for the Noncentral Wishart Distribution Useful for Simulation,
Leon Jay Gleser. Jun 75, 8p AFOSR-TR-77-0298
Grant AFOSR-72-2350
Availability: Pub. in Jnl. of the American Statistical Association, v71 n355 p690-695 Sep 76.

Descriptors: *Statistical distributions, Statistical inference, Multivariate analysis, Simulation, Reprints.
Identifiers: Wishart density functions.

No abstract available.

AD-A065 200/8GA PC **A02**/MF **A01**
Iowa State Univ., Ames. Dept. of Statistics.
Maximum Likelihood Approaches to Variance Component Estimation and to Related Problems,
David A. Harville. Dec 76, 24p AFOSR-TR-77-0808
Grant AFOSR-76-3037
Availability: Pub. in Jnl. of the American Statistical Association, v72 n358 p320-340 Jun 77.

Descriptors: *Analysis of variance, Iterations, Algorithms, Computations, Estimates, Reprints.
Identifiers: Maximum likelihood estimation.

No abstract available.

AD-A065 201/6GA PC **A02**/MF **A01**
Purdue Univ., Lafayette, IN. School of Electrical Engineering.
A Note on the k-Tail Method of Tree Grammar Inference,
John M. Brayer, and King-Sun Fu. 5 Aug 76, 9p AFOSR-TR-77-0827
Grant AFOSR-74-2661
Availability: Pub. in IEEE Transactions on Systems, Man, and Cybernetics p293-300 Apr 77.

Descriptors: *Mathematical logic, *Grammars, Cybernetics, Statistical inference, Reprints.
Identifiers: Trees(Mathematics).

No abstract available.

AD-A065 213/1GA PC **A02**/MF **A01**
Wayne State Univ., Detroit, MI. Dept. of Mathematics.
Nonlinear Reaction-Diffusion Models for Interacting Populations,
Stephen A. Williams, and Pao-Liu Chow. 1977, 15p ARO-12360.8-M
Grant DAAG29-76-G-0141
Availability: Pub. in Jnl. of Mathematical Analysis and Applications, v62 n1 p157-169 Jan 78.

Descriptors: Population(Mathematics), Reaction kinetics, Diffusion, Nonlinear differential equations, Reprints.
Identifiers: *Diffusion theory.

No abstract available.

AD-A065 215/6GA PC **A02**/MF **A01**
Missouri Univ.-Rolla. Dept. of Mathematics.
Inferences for the Two-Parameter Exponential Distribution Under Type 1 Censored Sampling,
F. T. Wright, Max Engelhardt, and Lee J. Bain. Feb 77, 8p ARO-13809.5-M
Grants DAAG29-76-G-0271, DAAG29-77-G-0128
Sponsored in part by Grant NSF-MCS76-06949.
Availability: Pub. in Jnl. of the American Statistical Association, v73 n363 p650-655 Sep 78.

Descriptors: Statistical distributions, Statistical inference, Exponential functions, Statistical samples, Reprints.
Identifiers: *Exponential density functions, Sampling.

No abstract available.

AD-A065 224/8GA PC **A02**/MF **A01**
Missouri Univ.-Rolla.
Comparison of Conditional and Unconditional Confidence Intervals for the Double Exponential Distribution,
John V. Grice, Lee J. Bain, and Max Engelhardt.
May 78, 11p ARO-13809.9-M
Grants DAAG29-77-G-0128, DAAG29-78-G-0094
Availability: Pub. in Communications in Statistics-Simulated Computations, vB7 n5 p515-524 1978.

Descriptors: *Confidence level, Statistical distributions, Monte Carlo method, Comparison, Reprints.
Identifiers: *Exponential density functions.

No abstract available.

AD-A065 283/4GA PC **A05**/MF **A01**
Stanford Univ., CA. Dept. of Computer Science.
Set Representation and Set Intersection.
Technical rept.,
Luis Trabb Pardo. Nov 78, 87p Rept no. STAN-CS-78-681
Contract N00014-76-C-0330

Descriptors: *Set theory, Computer programming, Asymptotic series, Searching, Binary notation, Theses.
Identifiers: Hash coding.

This work discusses the representation and manipulation of sets based on two different concepts: tries, and hashing functions. The sets considered here are assumed to be static: once created, there will be no further insertions or deletions. For both trie- and hash-based strategies, a series of representations is introduced which together with the availability of preprocessing reduces the average sizes of the sets to nearly optimal values, yet retains the inherently good retrieval characteristics. The intersection procedure for trie-based representations is based on the traversal in parallel of the tries representing the sets to be intersected, and it behaves like a series of binary searches when the sets to be intersected are of very different sizes. Hashed intersection runs very fast. The average time is proportional to the size of the smallest set to be intersected and is independent of the number of sets (except for the intersection set itself which has to be checked for every set). (Author)

AD-A065 285/9GA PC **A08**/MF **A01**
Stanford Univ., CA. Dept. of Computer Science.
Sparse and Parallel Matrix Computations.
Technical rept.,
Franklin Tai-Cheung Luk. Dec 78, 168p Rept no. STAN-CS-78-685
Grant DAHC04-75-G-0185

Descriptors: *Matrix theory, Solutions(General), Sparse matrix, Parallel processing, Quadratic programming, Computer applications, Theses.
Identifiers: Conjugate gradient method, Lanczos method, ILLIAC 4 computer, MatricesL(Mathematics).

This thesis deals with four important matrix problems: the application of many variants of the conjugate gradient method for solving matrix equations, the solution of lower and upper bounds quadratic programs associated with M-matrices, the construction of a Block Lanczos method for computing the greatest singular values of a matrix, and the computation of the singular value decomposition of a matrix on the ILLIAC-IV computer. (Author)

AD-A065 292/5GA PC **A06**/MF **A01**
Utah Univ., Salt Lake City. Dept. of Mathematics.
Numerical Methods for Singularities Via Sinc Functions.
Technical rept.,
Frank Stenger. 7 Dec 78, 111p ARO-14864.2-M
Grant DAAG29-77-G-0139

Descriptors: *Transcendental functions, *Numerical methods and procedures, Approximation(Mathematics), Interpolation, Convergence, Fourier transformation, Conformal mapping, Theorems, Integral equations, Differential equations.
Identifiers: Galerkin method, Singularities, Integral transformations, Hankel transformation, Laplace transformation, Hilbert transformation, Mellin transformation.

This paper summarizes the results known to date for using sinc functions composed with other functions as bases for approximations in numerical analysis. Described in this paper are methods of interpolation and approximation of functions and their derivatives, quadrature, the approximate evaluation of transforms (Hilbert, Fourier, Laplace, Hankel and Mellin) and the approximate solution of differential and integral equations. The methods have many advantages over classical methods which use polynomials as bases. In addition, all of the methods converge at an optimal rate, if singularities on the boundary of approximation are ignored. (Author)

AD-A065 309/7GA PC **A02**/MF **A01**
Maryland Univ., Baltimore County, Baltimore. Dept. of Mathematics.
Exact Boundary Control for Some Evolution Equations,
Thomas I. Seidman. 29 Apr 77, 22p ARO-14092.4-M
Grant DAAG29-77-G-0061
Availability: Pub. in Siam Jnl. of Control and Optimization, v16 n6 p979-999 Nov 78.

Descriptors: *Boundary layer control, Wave equations, Heat transfer, Operators(Mathematics), Reprints.
Identifiers: Manifolds(Mathematics).

No abstract available.

AD-A065 312/1GA PC **A03**/MF **A01**
Maryland Univ., College Park. Inst. for Physical Science and Technology.
A New Approach to Error Arithmetic,
F. W. J. Olver. 2 Dec 76, 28p ARO-11374.5-M
Grants DA-ARO-D-31-124-73-G204, NSF-GP-32841
Availability: Pub. in SIAM Jnl. on Numerical Analysis, v15 n2 p368-393 Apr 78.

Descriptors: *Error analysis, Floating point operation, Polynomials, Arithmetic, Reprints.

No abstract available.

AD-A065 316/2GA PC **A03**/MF **A01**
Maryland Univ., College Park. Inst. for Physical Science and Technology.
Sufficient Conditions for Ackerberg-O'Malley Resonance,
F. W. J. Olver. 1 Jun 76, 30p ARO-11374.8-M
Grants DA-ARO-D-31-124-73-G204, NSF-GP-32841X2
Availability: Pub. in SIAM Jnl. of Mathematical Analysis, v9 n2 p328-355 Apr 78.

Descriptors: *Boundary value problems, *Asymptotic series, Resonance, Relaxation, Solutions(General), Differential equations, Reprints.

No abstract available.

AD-A065 323/8GA PC **A02**/MF **A01**
Stanford Univ., CA. Dept. of Statistics.
Bayes and Equivariant Estimators of the Variance of a Finite Population.
Technical rept.,
S. Zacks, and Herbert Solomon. 21 Feb 79, 25p Rept nos. TR-268, TR-29
Contract N00014-76-C-0475, Grant DAAG-29-77-G-0031
Prepared in cooperation with Case Western Reserve Univ., Cleveland, OH., Contract N00014-75-C-0529.

Descriptors: *Analysis of variance, Population(Mathematics), Estimates, Efficiency, Bias, Statistical distributions.
Identifiers: Bayesian estimation, Likelihood functions.

The problem of estimating the variance of a finite population is studied in a Bayesian framework. On the basis of the modern theoretical approach to sampling from finite populations and the special structure of the likelihood functions Bayes estimators of the population variance are derived. The structure of equivariant estimators is analyzed and Bayes equivariant estimators in the strict and the generalized sense are derived. Posterior and prior efficiency of the estimators is discussed. (Author)

AD-A065 327/9GA PC **A02**/MF **A01**
Florida State Univ., Tallahassee. Dept. of Statistics.
Extreme Points of the Class of Discrete Decreasing Failure Rate Life Distributions.
Interim rept.,
Naftali A. Langberg, Ramon V. Leon, Frank Proschan, and James Lynch. Nov 78, 20p FSU-STATISTICS-M483, TR-78-4-AFOSR, AFOSR-TR-79-0094
Grant AFOSR-78-3678
Prepared in cooperation with Pennsylvania State Univ., University Park, Dept. of Statistics.

Descriptors: *Nonparametric statistics, Failure, Discrete distribution, Rates, Range(Extremes).
Identifiers: Convex sets.

The class of discrete decreasing failure rate (DFR) life distributions is shown to be a convex class. The extreme points of this class are found. It is shown how how to represent any discrete DFR distribution as a mixture of these extreme points. (Author)

AD-A065 398/0GA PC **A03**/MF **A01**
Brown Univ., Providence, RI. Lefschetz Center for Dynamical Systems.
Hereditary Control Problems: Numerical Methods Based on Averaging Approximations,
H. T. Banks, and J. A. Burns. 11 Mar 76, 41p AFOSR-TR-79-0156
Grant AFOSR-71-2078
Prepared in cooperation with Colorado Univ., Boulder. Dept. of Mathematics. Sponsored in part by Grant NSF-GP-28931.
Availability: Pub. in SIAM Jnl. of Control and Optimization, v16 n2 p169-208 Mar 78.

Descriptors: *Control theory, *Linear differential equations, Numerical methods and procedures, Approximation(Mathematics), Reprints.

No abstract available.

AD-A065 441/8GA PC **A03**/MF **A01**
Brown Univ., Providence, RI. Lefschetz Center for Dynamical Systems.
On the Zeros of Exponential Polynomials.
Interim rept.,
Cerino E. Avellar, and Jack K. Hale. Dec 78, 36p AFOSR-TR-79-0091
Grants AFOSR-76-3092, DAAG27-76-G-0294
Sponsored in part by Grant NSF-MCS76-07246.

Descriptors: *Polynomials, *Exponential functions, Solutions(General), Difference equations, Series(Mathematics).
Identifiers: *Roots of equations.

No abstract available.

AD-A065 456/6GA PC **A03**/MF **A01**
Stanford Univ., CA. Dept. of Statistics.
On an Optimal Stopping Problem of Guseinzade.
Technical rept.,
Arthur Q. Frank, and Stephen M. Samuels. 5 Mar 79, 31p TR-269, TR-30, ARO-14435.30M
Contract N00014-76-C-0475, Grant DAAG29-77-G-0031

Descriptors: *Stopping rules(Mathematics), *Rank order statistics, Selection, Optimization, Risk, Asymptotic series, Probability.
Identifiers: Secretary problem.

The problem of selecting one of the r best of n rankable individuals arriving in random order is studied, in which selection must be made with a stopping rule based only on the relative ranks of the successive arrivals. For each r up to r = 25, we give the limiting (as n approaches infinity) optimal risk (probability of not selecting) one of the r best) and the limiting optimal proportion of individuals to let go by before being willing to stop. (The complete limiting form of the optimal stopping rule is presented for each r up to r = 10, and for r = 15, 20 and 25.) We show that, for large n and r, the optimal risk is approximately (l-t*) to the rth power

where t* is approx. .2834 is obtained as the root of a function which is the solution to a certain differential equation; and the optimal stopping rule tau sub r,n lets approximately t*n arrivals go by then stops 'almost immediately' in the sense that tau sub r,n/n approaches t* in probability as n approaches infinity, r approaches infinity. (Author)

AD-A065 494/7GA PC **A02**/MF **A01**
Illinois Univ. at Urbana-Champaign. Coordinated Science Lab.
Multiple Time Scales in Single Input-Single Output High Gain Feedback Systems,
Kar-Keung D. Young. 1978, 10p AFOSR-TR-79-0104
Contract DAAB07-72-C-0259, Grant AFOSR-73-2570
Prepared in cooperation with Drexel Univ., Philadelphia, PA. Dept. of Mechanical Engineering and Mechanics.
Availability: Jnl. of the Franklin Institute, v306 n4 p293-301 Oct 78.

Descriptors: *Closed loop systems, Feedback, High gain, Input output models, Asymptotic series, Reprints.

No abstract available.

AD-A065 503/5GA PC **A02**/MF **A01**
City Coll., New York.
Ordering of an Exponentiated Multimode Quadratic Operator.
Technical rept.,
G. P. Agrawal, and C. L. Mehta. 1978, 14p Rept no. 12
Grant DAAG29-76-G-0055
Prepared in cooperation with Indian Inst. of Tech., New Delhi.
Availability: Pub. in Coherence and Quantum Optics IV p909-921 1978.

Descriptors: *Operators(Mathematics), Quantum theory, Multimode, Optics, Algebra, Harmonic analysis, Reprints.

No abstract available.

E79-10177 PC **A05**/MF **A01**
Lockheed Electronics Co., Inc., Houston, TX. Systems and Services Div.
Regressions by Leaps and Bounds and Biased Estimation Techniques in Yield Modeling.
Technical memo.,
N. Marquina. Feb 79, 83p LEC-12379, NASA-CR-160133, JSC-12700
Contract NAS9-15800

Descriptors: *Yield, *Regression analysis, Texas, Oklahoma, Skylab program, EREP, Meteorological parameters, Least squares method, Statistical analysis.

The author has identified the following significant results. It was observed that OLS was not adequate as an estimation procedure when the independent or regressor variables were involved in multicollinearities. This was shown to cause the presence of small eigenvalues of the extended correlation matrix A'A. It was demonstrated that the biased estimation techniques and the all-possible subset regression could help in finding a suitable model for predicting yield. Latent root regression was an excellent tool that found how many predictive and nonpredictive multicollinearities there were.

N79-19733/1GA PC **A05**/MF **A01**
Jet Propulsion Lab., Pasadena, CA.
Faster Fourier Transformation: The Algorithm of S. Winograd.
S. Zohar. 15 Feb 79, 99p NASA-CR-158230, JPL-PUB-78-104
Contract NAS7-100

Descriptors: *Fast Fourier transformtions, Algorithms, Electrical engineering, Analysis(Mathematics), Operations research.
Identifiers: DFT algorithm, Winograd algorithm, Tables(Data).

For abstract, see STAR 1710

N79-19773/7GA PC **A02**/MF **A01**
North Carolina State Univ. at Raleigh.
Numerical Methods for Problems Involving the Drazin Inverse.
Final Report, 1 Jun. 1978 - 1 Oct. 1978.
C. D. Meyer, Jr. 27 Mar 79, 8p NASA-CR-158233
Grant NSG-1532

Descriptors: *Inversions, *Numerical analysis, Algorithms, Differential equations, Linear equations, Markov chains, Matrices(Mathematics).
Identifiers: Linear differential equations, Drazin inverses.

For abstract, see STAR 1710

PB-294 575/6GA PC **A05**/MF **A01**
Agency for International Development, Manila (Philippines).
Time Series Analysis Handbook,
Kenneth F. Smith. Oct 75, 91p

Descriptors: *Time series analysis, Periodic variations, Seasonal variations, Trends, Variations, Planning, Philippines.
Identifiers: Irregularities, Long term effects, Developing country application.

Four principles of time series analysis are described in this handbook. They include: long term trends; cyclical variation; seasonal variation; and erratic or unpredictable variation. The booklet is a how-to guide for managers in evaluating existing programs and for forecasting purposes.

12B. Operations Research

AD-A064 839/4GA PC **A03**/MF **A01**
Michigan Univ., Ann Arbor. Computer Information and Control Engineering.
On Poisson Traffic Processes in Discrete State Markovian Systems with Applications to Queueing Theory.
Interim rept.,
Benjamin Melamed. Feb 78, 41p CICE-78-2, AFOSR-TR-79-0058
Contract N00014-75-C-0492, Grant AFOSR-76-2903
Revision of report dated Jul 77. Sponsored in part by Grant NSF-ENG75-20223. Prepared in cooperation with Northwestern Univ., Evanston, IL.

Descriptors: *Queueing theory, *Network flows, *Markov processes, Traffic, Transitions, Feedback.
Identifiers: Completeness theorem, Poisson processes.

A regular Markov process with continuous parameter, countable state space, and stationary transition probabilities is considered, over which a class of traffic processes is defined. The feasibility that multiple traffic processes constitute mutually independent Poisson processes is investigated in some detail. It is shown that a variety of independence conditions on a traffic process and the underlying Markov process are equivalent or sufficient to ensure Poisson related properties; these conditions include independent increments, renewal, weak pointwise independence, and pointwise independence. Two computational criteria for Poisson traffic are developed; a necessary condition in terms of weak pointwise independence, and a sufficient condition in terms of pointwise independence. The utility of these criteria is demonstrated by sample applications of queueing-theoretic models. It follows that, for the class of traffic processes as per this paper in queueing-theoretic contexts, Muntz's M yields M property, Gelenbe and Muntz's notion of completeness, and Kelly's notion of quasi-reversibility and essentially equivalent to pointwise independence of traffic and state. The relevance of the theory to queueing network decomposition is also noted. (Author)

AD-A064 843/6GA PC **A07**/MF **A01**
Ohio State Univ., Columbus. Electroscience Lab.
Identification of Catalogued and Uncatalogued Classes.
Interim rept.,
Heng-Cheng Lin. Dec 78, 127p ESL-783815-7, AFOSR-TR-79-0055
Grant AFOSR-74-2611

Descriptors: *Target classification, *Statistical processes, *Identification systems, Catalogs, Accuracy, False alarms, Target detection, Clustering, Target detection, Monte Carlo method, Simulation.
Identifiers: Efficiency.

A technique to discriminate listed objects from unlisted ones is described. It is based on the principle of minimizing the probability of error in an identification process. The devised classifier is implemented as a threshold test. The classifier was applied to an aircraft identification problem. It was shown that the error of misclassifying catalogued targets as uncatalogued and vice versa can be made very small, while keeping a high probability of correct identification when the presence of a listed object is detected. The implementation of the developed scheme was shown to be simple and efficient. (Author)

AD-A064 848/5GA PC **A02**/MF **A01**
Royal Aircraft Establishment, Farnborough (England).
Note on a Time Dependent Queue M/D/1 with Input Equal to Service Rate.
Technical memo.,
D. E. Lloyd. Sep 78, 17p RAE-TM-MATH-COMP-7807, DRIC-BR-65357

Descriptors: *Queueing theory, Time dependence, Poisson density functions, Input, Arrival, Great Britain.
Identifiers: M/D/1 queue.

In this paper we consider the time-dependent behaviour of a single-server queue with Poisson input and constant service time, where the input rate equals the reciprocal of the service time. Formulae for the probabilities associated with different queue-lengths have been derived by an empirical method which included inspection of some numerical results. These formulae are now proved correct by induction. (Author)

AD-A064 876/6GA PC **A03**/MF **A01**
Naval Postgraduate School, Monterey, CA.
Non-Stationary Infinite Server Models and Their Relatives.
Technical rept.,
Donald P. Gaver, and John P. Lehoczky. Oct 78, 42p Rept no. NPS-55-78-026

Descriptors: *Queueing theory, Arrival, Delay.
Identifiers: Pareto optimality, M/G/Infinity queue, Zipf law.

A backward equation technique is used to derive properties of a Time-dependent infinite server system subject to compound Poisson demand. The method is used to suggest a model leading to Zipf's law. (Author)

AD-A065 096/0GA PC **A04**/MF **A01**
Texas Univ. at Austin Center for Cybernetic Studies.
Implementation and Analysis of a Variant of the Dual Method for the Capacitated Transshipment Problem.
Research rept.,
Ronald D. Armstrong, Darwin Klingman, and David Whitman. Oct 78, 66p Rept no. CCS-324
Contract N00014-78-C-0222, Grant NSF-MCS77-00100

Descriptors: *Networks, *Simplex method, Shipping, Dual mode, Capacity(Quantity), Algorithms, Graphs.
Identifiers: Trees(Mathematics), Dual simplex method.

This paper presents a variant of the dual simplex method for the capacitated pure network problem and a computational analysis of this algorithm. This work includes the considerations of different list structures to store the original problem data and the basis and the testing of various procedures to select the leaving basic variable. This study also examines the sensitivity of the implementation to changes in problem parameters. The results show that the algorithm which is presented here is superior to earlier dual implementations. (Author)

AD-A065 174/5GA PC **A07**/MF **A01**
Stanford Univ., CA. Dept. of Operations Research.
Some Problems in the Optimal Control of Diffusions.
Technical rept.,
Diane Sheng. Dec 78, 134p Rept no. TR-84
Contract N00014-76-C-0418

Descriptors: *Diffusion theory, *Control theory, Queueing theory, Optimization, Stochastic processes, Brownian motion, Input output models, Analysis of variance, Drift, Convergence.
Identifiers: Cost.

A class of problems in the optimal control of one-dimensional diffusion processes is considered, with the objective to minimize expected discounted cost over an infinite planning horizon. There are available a finite number of control modes (actions), and the state of the system changes locally like a Brownian Motion whose drift and variance depend upon the control mode being employed (but not upon the current state). There is a holding cost which is proportional to the state of the system and is independent of the control mode. In addition to these continuous costs, there are lump costs associated with a change in action. The state space may be either a finite or semi-infinite interval, and different types of boundary behavior are considered. Absorbing barriers arise in applications to collective risk and insurance, while reflecting barriers are natural for problems in the optimal control of queueing and storage systems. When there are only two control modes, one expects an optimal policy characterized by a pair of critical numbers. For various special cases, it is shown that such an optimal policy exists, and (complicated) formulas for the critical numbers are derived. (Author)

AD-A065 263/6GA PC **A02**/MF **A01**
Massachusetts Inst. of Tech., Lexington. Lincoln Lab.
On a Simple Resource-Allocation Game.
Technical note,
Alan A. Grometstein. 29 Dec 78, 19p TN-1978-49, ESD-TR-78-371
Contract F19628-78-C-0002

Descriptors: *Game theory, Resources, Allocations, Equations, Optimization, Selection.
Identifiers: *Resource allocation.

A player is offered a finite set of numbers, one after another, each drawn at random from a known distribution. The player may choose a number when offered (not knowing the future choices) and thereby stop the game, whose value becomes the magnitude of the chosen number. The strategy by which the player decides how to choose a number to maximize the value of the game, is presented, and the game is generalized to the case in which it continues until the player has made n choices (the value of the game then being the sum of the n numbers chosen). (Author)

AD-A065 369/1GA PC **A02**/MF **A01**
Hawaii Univ., Honolulu. Dept. of Information and Computer Science.
The Upper Bound for the Stable Marriage Problem,
Stephen Y. Itoga. 1978, 5p ARO-14707.2-EL
Grant DAAG29-77-G-0196
Availability: Pub. in Jnl. of the Operational Research Society, v29 n8 p811-814 1978.

Descriptors: *Combinatorial analysis, Selection, Reprints.
Identifiers: *Stable marriage problem, Selection rules(Mathematics).

No abstract available.

AD-A065 414/5GA PC **A02**/MF **A01**
Texas Univ. at Austin. Center for Cybernetic Studies.
Degeneracy and the More-for-Less Paradox.
Research rept.,
Abraham Charnes, Salih Osman Duffuaa, and Michael J. Ryan. Sep 78, 11p Rept no. CCS-325
Contracts N00014-75-C-0616, N00014-75-C-0569

Descriptors: *Linear programming, *Distribution functions, Transportation, Marketing, Mathematical models, Optimization, Theorems.
Identifiers: Degeneracy, More for less paradox.

The conjecture that in the 'More-for-Less (nothing)' situation in the distribution model of linear programming that a spatial decomposition of markets would necessarily occur if shipments were increased to the point where the 'More-for-Less (nothing)' paradox just disappears. This paper proves that the conjecture is true.

AD-A065 459/0GA PC **A02**/MF **A01**
Texas Univ. at Austin. Center for Cybernetic Studies.
M.D. I. Estimation via Unconstrained Convex Programming.
Research rept.,
Patrick L. Brockett, Abraham Charnes, and William W. Cooper. Nov 78, 16p Rept no. CCS-326
Contracts N00014-75-C-0616, N00014-75-C-0569

Descriptors: *Mathematical programming, Discrimination, Convex sets, Estimates, Regression analysis.
Identifiers: Convex programming, Maximum likelihood estimation, Probability density functions.

A method is presented for obtaining minimum discrimination information (M.D.I.) estimates of probability distributions. This involves using an extremal principal and, viewing M.D.I. estimation in a dual convex programming framework. The resulting dual convex program is unconstrained and involves only exponential and linear terms, and hence is easily solved. This approach makes M.D.I. estimation computationally efficient and reduces the time and cost of obtaining such estimates.

AD-A065 493/9GA PC **A02**/MF **A01**
Delaware Univ., Newark. Dept. of Mathematics.
On the Solution of the Helmholtz Equation in the Neighborhood of a Corner,
Ralph E. Kleinman. 1978, 8p AFOSR-TR-79-0096
Grant AFOSR-74-2634
Availability: Pub. Zeitschrift fuer Angewandte Methematik und Mechanik, v58 pT379-T382 1978.

Descriptors: *Boundary value problems, Differential equations, Electromagnetic fields, Problem solving, Reprints.
Identifiers: *Helmholtz equation.

No abstract available.

AD-A065 497/0GA PC **A02**/MF **A01**
Northwestern Univ., Evanston, IL. Dept. of Electrical Engineering.
On p-Centers in Networks,
S. L. Hakimi, E. F. Schmeichel, and J. G. Pierce. Sep 75, 16p AFOSR-TR-79-0107
Grant AFOSR-76-3017
Availability: Pub. in Transportation Science, v12 n1 p1-15 Feb 78.

Descriptors: Networks, Algorithms, Reprints.
Identifiers: *Trees(Mathematics), P centers, Location theory.

No abstract available.

AD-A065 501/9GA PC **A02**/MF **A01**
Southern Methodist Univ., Dallas, TX. Dept. of Operations Research and Engineering Management.
Spike Swapping in Basis Reinversion.
Interim rept.,
R. V. Helgason, and J. L. Kennington. Jan 79, 13p OREM-79001, AFOSR-TR-79-0129
Grant AFOSR-77-3151

Descriptors: *Linear programming, Algorithms, Factor analysis, Subroutines, Spikes.
Identifiers: Reinversion.

An important component of a large scale linear programming system is the reinversion routine. This paper addresses an important ancillary technique for implementing a reinversion routine utilizing the well-known P(3) and P(4) pivot agenda algorithms of Hellerman and Rarick. Production of factors during reinversion typically involves a left-to-right pivoting process. Unfortunately, during the left-to-right process, a proposed pivot element of a spike column may be zero, in which case columns are interchanged in an attempt to obtain a pivotable column. In this paper we prove that the only columns in this paper we prove that the only columns which need be considered for the interchange with a nonpivotable spike are other spikes lying to the right within the same external bump. (Author)

PB-293 458/6GA PC **A05**/MF **A01**
Ohio State Univ., Columbus. Computer and Information Science Research Center.
Information Flow and Analysis: Theory, Simulation, and Examples. Part I. Basic Theoretical and Conceptual Development. Part II. Simulation, Examples and Results.
Technical rept.,
M. C. Yovits, and Lawrence L. Rose. Sep 78, 84p OSU-CISRC-TR-78-5
Grants NSF-DSI76-21949, NSF-GN-41628

Descriptors: *Decision theory, Information theory, Decision making, Mathematical models.
Identifiers: *Information flow.

This paper describes research which has been underway at The Ohio State University in an effort to develop a fundamental and general theory of information flow and analysis. More specifically, the research attempts to identify and quantify important variables and parameters in the information flow process; establish relationships among these variables; apply the theory to practical situations and to examine the resulting implications; and develop models, both simulation and experimental, to utilize and validate the theory. The basis for this work treats information as data of value in decision-making. This, in turn, leads to a powerful model of a generalized information system. The authors have made considerable progress and have developed the basic elements comprising a generalized theory. In particular, it has proved possible to establish quantitative definitions for and relationships among: quantity of information, value of information, effectiveness of information, decision-maker effectiveness, decision-maker performance, and other terms. By dealing with 'average' decision-makers, unique relationships for specific decision situations are established. The authors describe a flexible, sophisticated simulation model which permits the examination of the inter-relationship between information and decision-making for a wide variety of different situations. Detailed simulation results for two specific examples (a farmer and a baker) are presented.

13. MECHANICAL, INDUSTRIAL, CIVIL, AND MARINE ENGINEERING

13A. Air Conditioning, Heating, Lighting, and Ventilating

N79-19453/6GA PC **A06**/MF **A01**
Honeywell, Inc., Minneapolis, MN.
Preliminary Design Package for Residential Heating/Cooling System: Rankine Air Conditioner Redesign.
Dec 78, 109p NASA-CR-150871
Contract NAS8-32093
Subm-Prepared for DOE.

Descriptors: *Air conditioning, *Product development, *Rankine cycle, *Solar houses, Financial management, Heat generation, Solar collectors, Solar generators, System effectiveness.
Identifiers: Design, Houses, Solar space heating, Solar water heating.

For abstract, see STAR 1710

N79-19455/1GA PC **A04**/MF **A01**
Copper Development Association, Inc., New York.
Final System Instrumentation Design Package for Decade 80 Solar House.
Dec 78, 69p NASA-CR-150869
Contract NAS8-32244

Descriptors: *Instrument packages, *Solar houses, *Solar ponds(Heat storage), Cooling systems, Pipe flow, Pyranometers, Solar energy conversion.
Identifiers: Instrumentation, Systems engineering.

For abstract, see STAR 1710

PATENT-4 099 515
Not available NTIS
Department of Energy, Washington, DC.
Fabrication of Trough-Shaped Solar Collectors.
Patent,
W. W. Schertz. Filed 29 Jun 77, patented 11 Jul 78, 6p PAT-APPL-811 347
Supersedes PAT-APPL-811 347-77.
This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC. 20231 $0.50.

Descriptors: *Parabolic trough collectors, Aluminium, Design, Fabrication, Plastics, Solar absorbers.
Identifiers: ERDA/141000, *Patents.

For abstract, see ERA citation 04:022406.

PB-292 881/0GA PC **A03**/MF **A01**
Armstrong Cork Co., Lancaster, PA.
General Operating Rules for Power Boilers,
R. G. Wickat. 23 Mar 50, 32p ICA-TB-17
Sponsored in part by International Cooperation Administration, Washington, DC. Office of Industrial Resources.

Descriptors: *Boilers, *Instructions, Manuals.
Identifiers: Developing country application.

The manual is one of a series of training manuals. The suggested Rules 'Case of Power Boilers' promulgated by the American Society of Mechanical Engineers, the American Boiler Manufacturers Association, and various Political Sub-Division Authorities have been used as a guide in the preparation of these General Rules.

PB-293 498/2GA PC **A05**/MF **A01**
National Engineering Lab. (NBS), Washington, DC. Center for Building Technology.
CSA Weatherization Demonstration Project Plan,
Richard Crenshaw, Roy Clark, Robert Chapman, Richard Grot, and McClure Godette. Mar 79, 81p NBSIR-79-1706
Sponsored by Community Services Administration, Washington, DC.

Descriptors: *Low income groups, Houses, Residential buildings, Project planning.
Identifiers: *Energy conservation, *Retrofitting.

This report comprises the plan of a research and demonstration effort to determine the fraction of energy that may be saved by installing weatherization retrofits in poor peoples' homes throughout the United States. Two broad groups of weatherization retrofits are considered for application in each dwelling: (1) 'architectural,' those affecting the building shell; and (2) 'mechanical,' those affecting space heating and service hot water systems. The report presents the background of the demonstration, the research tasks associated with the demonstration, a description of the diagnostic tests to be used, the rationale for economic decisions, the tests for evaluating mechanical systems, and the calculation methods used in selecting architectural options.

PB-293 917/1GA PC **A04**/MF **A01**
Design Alternatives, Inc., Washington, DC.
Save Energy: Save Money,
Eugene Eccli, and Sandra Fulton Eccli. Aug 77, 52p
Sponsored in part by Agency for International Development, Washington, DC., and National Center for Appropriate Technology, Butte, MT.

Descriptors: *Heating, *Houses, Improvement, Savings, Cost control, Windows, Weatherstripping, Doors, Floors, Carpets, Furnaces, Stoves, Water heaters, Developing countries.
Identifiers: Appropriate technology, Developing country application.

Large savings can be made when people become aware of the problems of home heating and some low-cost ways of solving them. The booklet looks at the most common and severe problems. Directions are given for ways to save money which you can apply yourself. These are practical suggestions which cost little and can help right away.

13B. Civil Engineering

AD-A064 840/2GA PC **A05**/MF **A01**
New York State Dept. of Environmental Conservation, Albany.
National Dam Safety Program. Buck Horn Lake Dam (NY362). Susquehanna River Basin, Otsego County, New York. Phase I Inspection Report,
John B. Stetson. 29 Sep 78, 83p
Contract DACW51-78-C-0035
Prepared in cooperation with Dale Engineering Co., Inc., Utica, NY.

Descriptors: *Earth dams, *Inspection, *Structural analysis, Safety, New York, Visual inspection, Water supplies, Flood control, Reservoirs, Hydrology, Records.
Identifiers: National Dam Safety Program, *Buck Horn Lake Dam, Spillways.

This report provides information and analysis on the physical condition of the dam as of the report date. Information and analysis are based on visual inspection of the dam by the performing organization. Buck Horn Lake Dam was judged to be unsafe-non-emergency due to a seriously inadequate spillway. (Author)

AD-A064 841/0GA PC **A04**/MF **A01**
Tippetts-Abbett-McCarthy-Stratton, New York.
National Dam Safety Program. Watervliet Reservoir Dam (NY88). Hudson River Basin, Albany County, New York. Phase I Inspection Report,
Eugene O'Brien. 25 Jul 78, 62p
Contract DACW51-78-C-0024

Descriptors: *Dams, *Inspection, *Structural analysis, Safety, New York, Flood control, Water supplies, Reservoirs, Hydrology, Maintenance, Visual inspection, Concrete.
Identifiers: National Dam Safety Program, *Watervliet Reservoir Dam, Spillways.

This report provides information and analysis on the physical condition of the dam as of the report date. Information and analysis are based on visual inspection of the dam by the performing organization. Watervliet Reservoir Dam was judged to be unsafe-emergency. Immediate replacement of the penstock. (Author)

AD-A064 842/8GA PC **A03**/MF **A01**
New York State Dept. of Environmental Conservation, Albany.
National Dam Safety Program. Hillview Reservoir (NY187). Lower Hudson River Basin, Westchester County, New York. Phase I Inspection Report,
John B. Stetson. 28 Jul 78, 48p
Contract DACW51-78-C-0035

Descriptors: *Earth dams, *Inspection, *Structural analysis, Safety, New York, Flood control, Reservoirs, Water supplies, Maintenance, Hydrology, Embankments.
Identifiers: National Dam Safety Program, *Hillview Reservoir Dam.

This report provides information and analysis on the physical condition of the dam as of the report date. Information and analysis are based on visual inspection of the dam by the performing organization. Hillview Reservoir Dam was judged to be safe. (Author)

AD-A064 869/1GA PC **A06**/MF **A01**
New York State Dept. of Environmental Conservation, Albany.
National Dam Safety Program. Lake Kanawauke Dam (NDS NY 58, NYSDEC 196A-353), Lower Hudson River Watershed, Ramapo River Basin, Rockland County, New York. Phase I Inspection Report,
Edward A. Nowatzki, and Gary S. Salzman. 21 Jul 78, 112p
Contract DACW51-78-C-0035

Descriptors: *Dams, *Inspection, *Structural analysis, New York, Safety, Maintenance, Concrete, Flood control, Water supplies, Reservoirs, Hydrology, Geology.
Identifiers: National Dam Safety Program, *Lake Kanawauke Dam.

This report provides information and analysis on the physical condition of the dam as of the report date. Information and analysis are based on visual inspection of the dam by the performing organization. Lake Kanawauke Dam was judged to be safe, although several maintenance recommendations were made. (Author)

AD-A064 870/9GA PC **A05**/MF **A01**
New York State Dept. of Environmental Conservation, Albany.
National Dam Safety Program. Jerome Park Reservoir Dam (NDS NY 64, NYSDEC 135 LH), Lower Hudson River Watershed, Bronx County, New York. Phase I Inspection Report,
Edward A. Nowatzki, and Gary S. Salzman. 5 Sep 78, 98p
Contract DACW51-78-C-0035

Descriptors: *Earth dams, *Inspection, *Structural analysis, Safety, New York, Hydrology, Reservoirs, Water supplies, Flood control, Maintenance, Vegetation.
Identifiers: National Dam Safety Program, *Jerome Park Reservoir Dam.

This report provides information and analysis on the physical condition of the dam as of the report date. Information and analysis are based on visual inspection of the dam by the performing organization. The Jerome Park Reservoir Dam was judged to be safe. (Author)

AD-A064 922/8GA PC **A04**/MF **A01**
Berger Associates, Inc., Harrisburg, PA.
National Dam Inspection Program. Fishing Creek Dam (NDS MD 16). Potomac River Basin, Frederick County, State of Maryland. Phase I. Inspection Report.
Jul 78, 60p
Contract DACW31-78-C-0044

Descriptors: *Dams, *Inspection, *Structural analysis, Safety, Maryland, Maintenance, Concrete, Hydrology, Flood control, Water supplies, Geology, Visual inspection, Leakage(Fluid), Reservoirs.
Identifiers: National Dam Inspection Program, *Fishing Creek Dam, Spillways.

The Dam Inspection Act, Public Law 92-237 authorized the Secretary of the Army, through the Corps of Engineers, to initiate a program of inspections of dams throughout the United States. Phase I Inspection and Report is limited to a review of available data, a visual inspection of the dam site and the basic hydraulic calculations to determine the adequacy of the spillway. The purpose is to determine if the dam constitutes a hazard to human life and property.

AD-A064 923/6GA PC **A04**/MF **A01**
Berger Associates, Inc., Harrisburg, PA.
National Dam Safety Program. Ringtown Number 5 Dam (NDS PA-659). Susquehanna River Basin, Schuylkill County, Commonwealth of Pennsylvania. Phase I Inspection Report.
Sep 78, 56p
Contract DACW31-78-C-0044

Descriptors: *Earth dams, *Inspection, *Structural analysis, Safety, Pennsylvania, Maintenance, Flood control, Reservoirs, Water supplies, Visual inspection, Hydrology, Geology.
Identifiers: National Dam Safety Program, *Ringtown Number 5 Dam.

The Dam Inspection Act, Public Law 92-367, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a program of inspec-

tions of dams throughout the United States. The Phase I Inspection and Report are limited to a review of available data, a visual inspection of the dam site and basic calculations to determine the hydraulic adequacy of the spillway. The purpose is to determine if the dam constitutes a hazard to human life and property.

AD-A064 926/9GA PC **A04**/MF **A01**
Berger Associates, Inc., Harrisburg, PA.
National Dam Inspection Program. Big Piney Run Dam (Inventory Number NDS-MD-9), Ohio River Basin, Piney Creek, Garrett County, Maryland. Phase I Inspection Report.
Aug 78, 56p
Contract DACW31-78-C-0044

Descriptors: *Dams, *Inspection, *Structural analysis, Safety, Maryland, Flood control, Water supplies, Geology, Hydrology, Trees, Maintenance, Concrete, Repair.
Identifiers: National Dam Inspection Program, *Big Piney Run Dam.

The Dam Inspection Act, Public Law 92-367, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a program of inspections of dams throughout the United States. The Phase I Inspection and Report are limited to a review of available data, a visual inspection of the dam site and basic calculations to determine the hydraulic adequacy of the spillway. The purpose is to determine if the dam constitutes a hazard to human life and property.

AD-A064 927/7GA PC **A04**/MF **A01**
Berger Associates, Inc., Harrisburg, PA.
National Dam Inspection Program. Dehart Dam (Inventory Number NDS-PA-561), Susquehanna River Basin, Clarks Creek, Dauphin County, Pennsylvania. Phase I. Inspection Report.
Aug 78, 54p
Contract DACW31-78-C-0044

Descriptors: *Earth dams, *Inspection, *Structural analysis, Safety, Pennsylvania, Flood control, Water supplies, Reservoirs, Visual inspection, Geology, Hydrology, Maintenance.
Identifiers: National Dam Inspection Program, *Dehart Dam, Spillways.

The Dam Inspection Act, Public Law 92-367, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a program of inspections of dams throughout the United States. The Phase I Inspection and Report is limited to a review of available data, a visual inspection of the dam site and the basic calculations to determine the hydraulic adequacy of the spillway. The purpose is to determine if the dam constitutes a hazard to human life and property.

AD-A064 928/5GA MF **A01**
Berger Associates, Inc., Harrisburg, PA.
National Dam Inspection Progrm. Gunter Valley Dam (Inventory Number NDS-PA-323), Susquehanna River Basin, Trout Run, Franklin County, Pennsylvania. Phase I Inspection Report.
Aug 78, 70p
Contract DACW31-78-C-0044
Availability: Microfiche copies only.

Descriptors: *Earth dams, *Inspection, *Structural analysis, Safety, Pennsylvania, Flood control, Water supplies, Geology, Reservoirs, Hydrology, Maintenance, Visual inspection.
Identifiers: National Dam Inspection Program, *Gunter Valley Dam, Spillways.

The Dam Inspection Act, Public Law 92-367, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a program of inspections of dams throughout the United States. The Phase I Inspection and Report is limited to a review of available data, a visual inspection of the dam site and the basic calculations to determine the hydraulic adequacy of the spillway. The purpose is to determine if the dam constitutes a hazard to human life and property.

AD-A064 929/3GA PC **A04**/MF **A01**
Berger Associates, Inc., Harrisburg, PA.
National Dam Safety Program. Sheppard Meyers Dam (NDS NY 337), Susquehanna River Basin, York County, Pennsylvania. Phase I. Inspection Reprot.
30 May 78, 55p
Contract DACW31-78-C-0044

Descriptors: *Earth dams, *Inspection, *Structural analysis, Safety, Pennsylvania, Maintenance, Geology, Flood control, Water supplies, Reservoirs, Hydrology, Visual inspection, Seismic data.
Identifiers: National Dam Safety Program, *Sheppard Meyers Dam, Spillways.

No abstract available.

AD-A064 930/1GA MF **A01**
Berger Associates, Inc., Harrisburg, PA.
National Dam Inspection Program. Pine Grove Dam (NDS PA-23), Susquehanna River Basin, Chester and Lancaster Counties, Pennsylvania. Phase 1 Inspection Report.
25 Aug 78, 66p
Contract DACW31-78-C-0044
Availability: Microfiche copies only.

Descriptors: *Earth dams, *Inspection, *Structural analysis, Safety, Pennsylvania, Maintenance, Flood control, Water supplies, Reservoirs, Visual inspection, Hydrology.
Identifiers: National Dam Inspection Program, *Pine Grove Dam, Spillways.

The Dam Inspection Act, Public Law 92-367, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a program of inspections of dams throughout the United States. The Phase I Inspection and Report is limited to a review of available data, a visual inspection of the dam site and the basic calculations to determine the hydraulic adequacy of the spillway. The purpose is to determine if the dam constitutes a hazard to human life and property.

AD-A064 934/3GA PC **A04**/MF **A01**
Berger Associates, Inc., Harrisburg, PA.
National Dam Safety Program. Hunting Creek Dam (Inventory Number NDS-MD-58), Potomac River Basin, Frederick County, Maryland. Phase I Inspection Report.
Sep 78, 58p
Contract DACW31-78-C-0044

Descriptors: *Earth dams, *Inspection, *Structural analysis, Safety, Maryland, Flood control, Water supplies, Reservoirs, Geology, Seismic data, Hydrology.
Identifiers: National Dam Safety Program, *Hunting Creek Dam, Spillways.

The Dam Inspection Act, Public Law 92-367, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a program of inspections of dams throughout the United States. The Phase I Inspection and Report are limited to a review of available data, a visual inspection of the dam site and basic calculations to determine the hydraulic adequacy of the spillway. The purpose is to determine if the dam constitutes a hazard to human life and property.

AD-A064 935/0GA PC **A04**/MF **A01**
Berger Associates, Inc., Harrisburg, PA.
National Dam Safety Program. Lake Meade Dam, Susquehanna River Basin, Commonwealth of Pennsylvania, Adams County (NDS-PA-331). Phase I Inspection Report.
Sep 78, 57p
Contract DACW31-78-C-0044

Descriptors: *Earth dams, *Inspection, *Structural analysis, Safety, Pennsylvania, Flood control, Water supplies, Reservoirs, Maintenance, Geology, Hydrology, Visual inspection.
Identifiers: National Dam Safety Program, *Lake Meade Dam, *Spillways.

The Dam Inspection Act, Public Law 92-367, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a program of inspections of dams throughout the United States. The Phase I Inspection and Report are limited to a review of available data, a visual inspection of the dam site and basic calculations to determine the hydraulic adequacy of the spillway. The purpose is to determine if the dam constitutes a hazard to human life and property.

AD-A064 937/6GA PC **A04**/MF **A01**
Berger Associates, Inc., Harrisburg, PA.
National Dam Inspection Program. Ringtown Number 6 Dam, Susquehanna River Basin, Commonwealth of Pennsylvania, Schuylkill County (NDS-PA-660). Phase I Inspection Report.
Sep 78, 66p
Contract DACW31-78-C-0044

Descriptors: *Earth dams, *Inspection, *Structural analysis, Safety, Pennsylvania, Maintenance, Flood control, Water supplies, Reservoirs, Geology, Hydrology, Seismic data, Embankments.
Identifiers: National Dam Inspection Program, *Ringtown Number 6 Dam, Spillways.

The Dam Inspection Act, Public Law 92-367, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a program of inspections of dams throughout the United States. The Phase I Inspection and Report are limited to a review of available data, a visual inspection of the dam site and basic calculations to determine the hydraulic adequacy of the spillway. The purpose is to determine if the dam constitutes a hazard to human life and property.

AD-A064 938/4GA PC **A04**/MF **A01**
Berger Associates, Inc., Harrisburg, PA.
National Dam Inspection Program. Little Buffalo Creek Dam, Susquehanna River Basin, Commonwealth of Pennsylvania, Perry County (NDS-PA-582). Phase I Inspection Report.
11 Sep 78, 59p
Contract DACW31-78-C-0044

Descriptors: *Earth dams, *Inspection, *Structural analysis, Safety, Pennsylvania, Maintenance, Flood control, Water supplies, Seismic data, Hydrology, Geology, Reservoirs.
Identifiers: National Dam Inspection Program, *Little Buffalo Creek Dam, Spillways.

The Dam Inspection Act, Public Law 92-367, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a program of inspections of dams throughout the United States. The Phase I Inspection and Report are limited to a review of available data, a visual inspection of the dam site and basic calculations to determine the hydraulic adequacy of the spillway. The purpose is to determine if the dam constitutes a hazard to human life and property.

AD-A064 939/2GA PC **A04**/MF **A01**
Berger Associates, Inc., Harrisburg, PA.
National Dam Safety Program, High Bridge Dam, Susquehanna River Basin, Commonwealth of Pennsylvania, Schuylkill County (NDS-PA-679). Phase I Inspection Report.
Sep 78, 66p
Contract DACW31-78-C-0044

Descriptors: *Earth dams, *Inspection, *Structural analysis, Safety, Pennsylvania, Flood control, Water supplies, Hydrology, Visual inspection, Reservoirs, Maintenance, Seismic data.
Identifiers: National Dam Safety Program, *High Bridge Dam, Spillways.

The Dam Inspection Act, Pulbic Law 92-367, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a program of inspections of dams throughout the United States. The Phase I Inspection and Report are limited to a review of available data, a visual inspection of the dam site and basic calculations to determine the hydraulic adequacy of the spillway. The purpose is to determine if the dam constitutes a hazard to human life and property.

AD-A064 940/0GA PC **A04**/MF **A01**
Berger Associates, Inc., Harrisburg, PA.
National Dam Safety Program. Antietam Dam (NDS PA-332). Potomac River Basin, Adams County, Commonwealth of Pennsylvania. Phase I Inspection Report.
Sep 78, 52p
Contract DACW31-78-C-0044

Descriptors: *Earth dams, *Inspection, *Structural analysis, Safety, Pennsylvania, Maintenance, Flood control, Water supplies, Hydrology, Seismic data, Visual inspection, Reservoirs.
Identifiers: National Dam Safety Program, *Antietam Dam.

The Dam Inspection Act, Public Law 92-367, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a program of inspections of dams throughout the United States. Phase I Inspection and Report is limited to a review of available data, a visual inspection of the dam site and the basic calculations to determine the hydraulic adequacy of the spillway. The purpose is to determine if the dam constitutes a hazard to human life and property.

AD-A064 941/8GA PC **A04**/MF **A01**
Berger Associates, Inc., Harrisburg, PA.
National Dam Safety Program. Little Pine Creek Dam (NDS PA-351). Susquehanna River Basin, Lycoming County, Commonwealth of Pennsylvania. Phase I Inspection Report.
1978, 57p
Contract DACW31-78-C-0044

Descriptors: *Earth dams, *Inspection, *Structural analysis, Pennsylvania, Safety, Maintenance, Visual inspection, Hydrology, Flood control, Geology, Water supplies, Reservoirs, Seismic data.
Identifiers: National Dam Safety Program, *Little Pine Creek Dam, Spillways.

The Dam Inspection Act, Public Law 92-367, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a program of inspections of dams throughout the United States. The Phase I Inspection and Report are limited to a review of available data, a visual inspection of the dam site and basic calculations to determine the hydraulic adequacy of the spillway. The purpose is to determine if the dam constitutes a hazard to human life and property.

AD-A064 961/6GA PC **A04**/MF **A01**
Berger Associates, Inc., Harrisburg, PA.
National Dam Inspection Program. Liberty Dam, Upper Chesapeake Bay Basin, State of Maryland, Baltimore and Carroll Counties (NDS-MD-3). Phase I Inspection Report.
Sep 78, 68p
Contract DACW31-78-C-0044

Descriptors: *Dams, *Inspection, *Structural analysis, Safety, Maryland, Flood control, Water supplies, Concrete, Visual inspection, Reservoirs, Hydrology, Maintenance.
Identifiers: National Dam Inspection Program, *Liberty Dam, Spillways.

The Dam Inspection Act, Public Law 92-367, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a program of inspections of dams throughout the United States. Phase I Inspection and Report is limited to a review of available data, a visual inspection of the dam site and the basic hydraulic calculations to determine the adequacy of the spillway. The purpose is to determine if the dam constitutes a hazard to human life and property.

AD-A064 981/4GA PC **A04**/MF **A01**
Berger Associates, Inc., Harrisburg, PA.
National Dam Safety Program. Lake Marburg (NDS PA-869), Susquehanna River Basin, York County, Pennsylvania. Phase 1 Inspection Report.
25 Aug 78, 61p
Contract DACW31-78-C-0044

Descriptors: *Earth dams, *Inspection, *Structural analysis, Safety, Pennsylvania, Maintenance, Flood control, Water supplies, Geology, Hydrology, Aquifers.
Identifiers: National Dam Inspection Program, *Lake Marburg Dam, Spillways.

The Dam Inspection Act, Public Law 92-367, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a program of inspections of dams throughout the United States. The Phase I Inspection and Report are limited to a review of available data, a visual inspection of the dam site and basic calculations to determine the hydraulic adequacy of the spillway. The purpose is to determine if the dam constitutes a hazard to human life and property.

AD-A064 982/2GA PC **A05**/MF **A01**
GAI Consultants, Inc., Monroeville, PA.
National Dam Inspection Program. Greenlick Run Dam (NDI Number PA-355), Ohio River Basin, Greenlick Run, Fayette County, Pennsylvania. Phase I Inspection Report.
Oct 78, 76p
Contract DACW31-78-C-0052
Original contains color plates: All DDC and NTIS reproductions will be in black and white.

Descriptors: *Earth dams, *Inspection, *Structural analysis, Safety, Pennsylvania, Flood control, Water supplies, Reservoirs, Geology, Hydrology, Seismic data, Visual inspection, Maintenance.
Identifiers: National Dam Inspection Program, *Greenlick Run Dam.

The Dam Inspection Act, Public Law 92-367, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a program of inspection of dams throughout the United States. The purpose is to determine if the dam constitutes a hazard to human life or property.

AD-A064 983/0GA PC **A05**/MF **A01**
GAI Consultants, Inc., Monroeville, PA.
National Dam Inspection Program. Keystone Dam (NDI Number PA-480), Ohio River Basin, McCune Run, Westmoreland County, Pennsylvania. Phase I Inspection Report.
Oct 78, 84p
Contract DACW31-78-C-0052
Original contains color plates: All DDC and NTIS reproductions will be in black and white.

Descriptors: *Earth dams, *Inspection, *Structural analysis, Safety, Pennsylvania, Flood control, Reservoirs, Maintenance, Geology, Hydrology.
Identifiers: National Dam Inspection Program, *Keystone Dam, Spillways.

The Dam Inspection Act, Public Law 92-367, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a program of inspection of dams throughout the United States. The purpose is to determine if the dam constitutes a hazard to human life or property.

AD-A064 984/8GA PC **A04**/MF **A01**
Berger Associates, Inc., Harrisburg, PA.
National Dam Safety Program. George B. Stevenson Dam (Inventory Number PA-914), Susquehanna River Basin, First Fork Sinnemahoning Creek, Cameron County, Pennsylvania. Phase I Inspection Report.
26 Oct 78, 62p
Contract DACW31-78-C-0044

Descriptors: *Earth dams, *Inspection, *Structural analysis, Safety, Pennsylvania, Flood control, Reservoirs, Water supplies, Geology, Hydrology, Maintenance, Visual inspection, Seismic data.
Identifiers: National Dam Safety Program, *George B. Stevenson Dam, Spillways.

The Dam Inspection Act, Public Law 92-367, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a program of inspections of dams throughout the United States. The Phase I Inspection and Report are limited to a review of available data, a visual inspection of the dam site and basic calculations to determine the hydraulic adequacy of the spillway. The purpose is to determine if the dam constitutes a hazard to human life and property.

AD-A064 985/5GA PC **A04**/MF **A01**
Berger Associates, Inc., Harrisburg, PA.
National Dam Safety Program. Pinchot Lake Dam (Inventory Number NDS 335), Susquehanna River Basin, Beaver Creek, York County, Pennsylvania. Phase I Inspection Report.
23 May 78, 58p
Contract DACW31-78-C-0044

Descriptors: *Earth dams, *Inspection, *Structural analysis, Safety, Pennsylvania, Geology, Flood control, Water supplies, Hydrology, Maintenance, Reservoirs, Embankments.
Identifiers: National Dam Safety Program, *Pinchot Lake Dam, Spillways.

The Dam Inspection Act, Public Law 92-367 (Appendix III) authorized the Secretary of the Army, through the Corps of Engineers, to initiate a program of safety inspections of dams throughout the United States. Phase I INSPECTION AND Report is limited to a review of available data, a visual inspection of the dam site and the basic calculations for determining the hydraulic adequacy of the spillway. The purpose is to determine if the dam constitutes a hazard to human life and property.

AD-A065 017/6GA MF **A01**
Office of Naval Research, London (England).
European Dredging - A Review of the State of the Art,
John F. Hoffman. 15 Nov 78, 41p Rept no. ONRL-R-12-78
Availability: Microfiche copies only.

Descriptors: *Dredging, Europe, Foreign technology, *Harbors, Waterways, Sediment transport, Maintenance, Silt, *Sedimentation, Hydraulic models.
Identifiers: *Reviews.

The state-of-the-art of dredging in Europe is described. The details are on a three-month on-site investigation in the countries of Belgium, England, France, Germany, Holland and Scotland. Information was obtained during conferences involving more than 40 persons. Visited were two dredging firms, one manufacturer of dredging equipment, three universities, six laboratories concerned with the hydraulics and/or sedimentation in harbors, eight port authorities, and three miscellaneous federal agencies. New dredging technology- modifications to old dredging technology as well as dredging practices in selected European ports is discussed. The facilities and capabilities of the hydraulic laboratories visited are described. (Author)

AD-A065 024/2GA PC **A06**/MF **A01**
Defence and Civil Inst. of Environmental Medicine, Downsview (Ontario).
Research and Development Towards a Facility for Water Purification and Waste Treatment in the North.
Technical rept.,
D. R. Day. Oct 78, 115p Rept no. DCIEM-TR-78X8
Revision of report dated Mar 78.

Descriptors: Waste disposal, *Arctic regions, Sanitary engineering, *Solid wastes, *Water quality, Toilet facilities, Cold weather tests, Water pollution, Septic tanks, Incinerators, Waste management.
Identifiers: *Sewage treatment.

The design of an air-transportable Environmental Service Module, an integrated water purification, solid waste disposal, and sewage treatment system complete with consumer facilities, is outlined with cost estimations for small 100-200 man groups in the North. The treatment processes produce a compact sterile residue which can be disposed of relatively easily. Eighty percent of the water used in the facility is recycled from the waste streams to potable quality for reuse, thus greatly reducing the demand for water from the environment. Test data from a scaled-down pilot plant operating on municipal sewage is presented which demonstrates the basic treatment process. Preliminary selection of equipment has been completed, and conceptual module layouts for full-scale system are also shown. A bibliography on Arctic water treatment, waste disposal, and related topics is also included. (Author)

AD-A065 109/1GA PC **A06**/MF **A01**
Texas Univ. at San Antonio. Center for Applied Research and Technology.
The Evaluation of Alternate Methods of Reverse Osmosis Membrane Maintenance.
Final rept.,
Charles A. Sorber, Karl E. Longley, Robert F. Williams, Barbara E. Moore, and Michael Ibarra.
31 Jan 79, 103p Rept no. 78-8
Contract DAAK70-77-C-0018

Descriptors: *Water supplies, *Reverse osmosis, *Membranes, *Germicides, *Disinfection, Immer-

sion, Polyamide plastics, Iodine, Iodine compounds, Bromides, Chlorine, Escherichia coli, Pseudomonas aeruginosa, Pseudomonas fluorescens.
Identifiers: *Water treatment.

The purpose of this study was to determine the effects of a disinfectant on the membrane surface and to determine the bactericidal efficiencies of several disinfectants on organisms found on the membrane surface. This information may help evaluate whether field disinfection of an RI unit is practicable for prolongation of service. The first direction studied the chemical effects of several iodine concentrations, as a suitable disinfectant, on polyamide and polycellulose special wound membranes in 2000-hour static immersion tests. The second direction studied and compared the bactericidal efficiency of iodine, iodine bromide, and chlorine on the test organisms. The organisms employed, Pseudomonas fluorescens, Pseudomonas aerugenosa, and Escherichia coli, were isolated from a polyamide membrane subjected to field test conditions by USAMERADCOM personnel and were determined to be the most prevalent organisms. The major conclusions derived from this study are: (1) P. aeruginosa, P. fluorescens, and E. coli are the predominant microbiological agents on fouled polyamide membranes (Potomac River water test site) and these organisms can be isolated, identified, and cultured. (2) There is significant polyamide membrane deterioration upon immersion of the membrane in a static test system. The deterioration is evidenced by the appearance of holes of various sizes in the surface. These structural abnormalities appear after 45 days immersion in either a 1 or 5 mg/1 iodine solution. (3) The organisms P. aeruginosa and P. fluorescens are more resistant than E. coli to inactivation using either iodine, iodine bromide, or chlorine as the disinfectant.

AD-A065 120/8GA PC **A10**/MF **A01**
New Mexico Univ., Albuquerque. Eric H. Wang Civil Engineering Research Facility.
Transportable Wastewater Advanced Refinement and Demonstration System.
Final technical rept. 11 Nov 77-15 May 78,
Neil D. Williams, James Matthews, and Robert G. Perry. Oct 78, 217p CEEDO-TR-78-25
Contract F29601-76-C-0015

Descriptors: Transportable, Data processing, Cost analysis.
Identifiers: *Sewage treatment, Design, Fluidized bed processors, Denitrification, TWARDS system.

This report documents the design of the Transportable Wastewater Advanced Refinement and Demonstration System (TWARDS). The unit features advanced concepts in wastewater treatment such as induced laminar flow, fixed position sludge collection, fluidized bed and biodisc denitrification, and automated instrumentation. A recommended development plan is included with the report which outlines the fabrication schedule and cost estimates for all phases of the project. (Author)

AD-A065 176/0GA PC **A04**/MF **A01**
New York State Dept. of Environmental Conservation, Albany.
National Dam Safety Program. Batavia Kill Watershed Project Dam Number 1 (Inventory Number NY-615), Mohawk River Basin, Batavia Kill, Greene County, New York. Phase I Inspection Report,
George Koch. 18 Sep 78, 66p
Contract DACW51-78-C-0035

Descriptors: *Earth dams, *Inspection, *Structural analysis, Safety, New York, Reservoirs, Maintenance, Hydrology, Visual inspection, Flood control, Water supplies.
Identifiers: National Dam Safety Program, *Batavia Kill Watershed Project Dam Number 1, Spillways.

This report provides information and analysis on the physical condition of the dam as of the report date. Information and analysis are based on visual inspection of the dam by the performing organization. Batavia Kill Watershed Project Dam no. 1 was judged to be safe. (Author)

AD-A065 189/3GA PC **A03**/MF **A01**
Army Engineer Waterways Experiment Station, Vicksburg, MS.
Levee Wave Wash Protection by Trees; Hydraulic Model Investigation.
Final rept.,
Dennis G. Markle. Jan 79, 26p Rept no. WES-MP-HL-79-1

Descriptors: *Levees, *Erosion, *Trees, Hydraulic models, Embankments, Protection, Propagation, Test facilities, Army Corps of Engineers.

A hydraulic model investigation was conducted at a geometrically undistorted scale of 1:5, model to prototype. The purpose of the study was to test the use of tree stands as a possible method for protecting levee embankments from wave wash caused by wind- and boat-generated waves. Incident wave heights ranging from 1.0 to 3.0 ft and wave periods of 2.0, 2.5, and 3.0 sec were tested on a total of 12 different test plans. The 12 plans covered a range of depths of tree stands using exclusively 4-in.- and 12-in.-diameter tree stems both with and without defoliated branch systems. The test results showed that for tree stems without branches the wave attenuation did not exceed a maximum of about 15 percent and on the average did not exceed about 9 percent. Tree stems with branch systems showed a maximum wave attenuation of about 45 percent, but the average wave attenuation did not exceed 15 percent. (Author)

AD-A065 192/7GA PC **A05**/MF **A01**
Cold Regions Research and Engineering Lab., Hanover, NH.
Tundra Disturbances and Recovery Following the 1949 Exploratory Drilling, Fish Creek, Northern Alaska,
D. E. Lawson, J. Brown, K. R. Everett, A. W. Johnson, and V. Komarkova. Dec 78, 92p Rept no. CRREL-78-28

Descriptors: Cold weather operations, *Tundra, Environmental protection, Arctic regions, Alaska, Permafrost, Meteorological data, *Drilling, Melting, Vegetation, Erosion, *Pollution.
Identifiers: *Fish Creek, Soil erosion, *Enviromental impacts, Oil wells, Oil spills.

A 1949 drill site in the Naval Petroleum Reserve Number 4, Alaska, the Fish Creek Test Well 1, was examined in August 1977 to determine the disturbance caused by drilling activities and to analyze the response and recovery of vegetation, soils, permafrost, and surficial materials to that disturbance. Man-made disturbances include bladed and unbladed vehicular trails, a winter runway, excavations, pilings, remains of camp structures, steel drums and other solid waste, and hydrocarbon spills. The most intense and lasting disturbance to the vegetation, soils, and permafrost resulted from bulldozing of surface materials, diesel fuel spills, and trails developed by multiple passes of vehicles. Thermokarst subsidence and thermal erosion, caused by increased thaw of permafrost due to disturbance, resulted in the development of a hummocky topography and water-filled depressions at the drill site. Some ice wedges disturbed in 1949 are still melting. Soil disturbance ranges from minor modification to complete destruction of the soil morphology. The effects of hydrocarbon spills are still detectable in the soils. Little of the original vegetation remains in the intensely disturbed area, such as around the drill pad where a grass-dominated community prevails. After 28 years, the vegetation cover is closed over most mesic sites, shallow wet sites are well vegetated, and xeric sites, areas of diesel fuel spills and areas of severe erosion remain mostly bare. Pioneering plant species on bare, disturbed areas are members of mature vegetation assemblages from the undisturbed tundra which have high reproductive and dispersal capacities. A hypothetical model of natural revegetation and vegetation recovery is proposed.

AD-A065 269/3GA PC **A11**/MF **A01**
Civil Engineering Lab. (Navy), Port Hueneme, CA.
Engineering Manual for McMurdo Station.
Final rept.,
C. R. Hotfman, W. H. Beard, J. E. Dykins, R. A. Paige, and M. W. Thomas. Mar 74, 232p
Original contains color plates: All DDC and NTIS reproductions will be in black and white.

Descriptors: *Instruction manuals, *Cold weather operations, Civil engineering, *Antarctic regions, Construction, Heating, Permafrost, Sanitary engineering, Airports, Roads, Construction equipment, Waste disposal, Geology, Meteorology, Logistics, Snow removal, Maintenance management.
Identifiers: *McMurdo.

Describes terrain and environment of McMurdo, the main U.S. station in Antarctica. Presents engineering methods and operational procedures. Discusses McMurdo Ice Shelf, sea ice, building design, utilities, airfields and roads, wharf, pollution control, transportation and construction equipment, and materials. (Author)

AD-A065 415/2GA PC **A04**/MF **A01**
Systems Technology Corp., Xenia, OH.
72-Hour Operating Test of a Packaged Heat Recovery Incinerator.
Final rept.,
Lloyd W. Anderson. Aug 78, 75p CEL-CR-79.003
Contract N68305-77-C-0037

Descriptors: *Incinerators, *Heat recovery, *Solid wastes, Installation, Municipalities, Site selection, Test methods, Test equipment, Refuse collection, Naval shore facilities, Steam power plants.
Identifiers: Electric power plants, *Waste heat utilization.

The performance of the North Little Rock, AR, municipal heat recovery incinerator installation was monitored over a 4-day period. The average energy contents of the solid waste, as fixed, was 3800 Btu/lb. The average conversion efficiency over the 4-day period was found to be 50.7% based upon the low heating value of the solid waste. (Author)

AD-A065 428/5GA PC **A03**/MF **A01**
Army Engineer Waterways Experiment Station, Vicksburg, MS.
Section 32 Program. Streambank Erosion Control Evaluation and Demonstration Work Unit 4- Research on Soil Stability and Identification of Causes of Streambank Erosion. Evaluation of Spray-on Stabilizer for Bank Protection,
Jessie C. Oldham. Feb 79, 34p Rept no. WES-INVESTIGATION-1

Descriptors: *Soil erosion, *Soil stabilization, Sprays, Tables(Data).
Identifiers: Aerospray 70 stabilizer, Soil Seal stabilizer, DLR stabilizer, Penerrime stabilizer, Nerozin stabilizer, *Bank protection(Waterways), Erosion control, Vegetation, Grasses.

This investigation clearly indicated the advantages of using spray-on stabilizers on denuded slopes until vegetation becomes established. Three of the materials tested, Aerospray-70, Soil Seal, and DLR, were effective in establishing vegetation. These materials showed no adverse effect on germination. Bermuda grass in these sections emerged and propagated better than that in the control plot. Aerospray-70 and Soil Seal were the most effective in controlling soil erosion during the test period. The plant emergence and growth rate using Peneprime and Nerozin were below that obtained in the control plot. In conclusion, it is recommended that Aerospray-70 and Soil Seal be incorporated into some of the Section 32 Program demonstration projects for field testing. It is also recommended that spray-on stabilizers be considered for general use to inhibit erosion while enhancing plant emergence and early growth. General guidelines for application of spray-on stabilizers are given in Appendix A; further studies on various types of soils subject to different conditions may show more effective application procedures.

AD-A065 455/8GA PC **A04**/MF **A01**
Coast Guard, Washington, DC. Office of Research and Development.
Field Tests of Six Offshore Oil Containment Booms. Part I.
Final rept.,
P. R. Corpuz, and R. A. Griffiths. Nov 78, 72p Rept no. USCG-D-78-78-PT-1

Descriptors: *Oil pollution containment, Oil tanks, *Oil spills, Removal, Sea testing, Reliability, Test methods, Field tests, Oils, Cleaning.
Identifiers: *Oil booms, *Booms(Equipment).

This report describes the test procedures and equipment used in testing six different oil containment booms in the Gulf of Mexico. Oil was not used. Each boom was evaluated for its seakeeping and logistic requirements for deployment and retrieval. Each boom was moored in a U shape, or catenary, configuration. This was done by establishing two sets of mooring buoys on opposite sides of the Navy platform, Stage I, off Panama City, Florida. Test were conducted from 28 March through 28 April 1977. The booms tested were obtained on loan from the various manufacturers, their representatives, or other sources. An attempt was made to obtain booms suitable for open water use that employ different means of maintaining flotation and of carrying tension. Seakeeping data was obtained through documentation with a videotape system developed by the U.S. Coast Guard Research and Development Center. The videotapes were analyzed, and the data are presented in Part 2 of this report.

AD-A065 464/0GA PC **A04**/MF **A01**
Daedalean Associates Inc., Woodbine, MD.
The Research and Development of a Cavitating Water Jet Cleaning System for Removing Marine Growth and Fouling from Offshore Platform Structures: Feasibility Evaluation.
Technical rept.,
Stephen C. Howard, Dwight R. Koogle, and A. A. Hochrein, Jr. Dec 78, 60p Rept no. DAI-SH-7759-002-TR
Contract N00014-77-C-0367
Original contains color plates: All DDC and NTIS reproductions will be in black and white.

Descriptors: *Water jets, *Offshore structures, Cleaning, Platforms, Fouling organisms, Underwater construction, Fouling, Removal, Nozzles, Experimental design, Cavitation, Antifouling.

The technical feasibility of using the cavitating water jet technique for removing marine growth and protective coatings from steel substrate material has been demonstrated under laboratory conditions in the initial phase of the program. The test results for this phase indicate that the CONCAVER technique can remove the fouling and coating from test panels that had been submerged in the Atlantic Ocean for up to 36 months. Test panels coated with epoxy vinyl were cleaned to bare metal. Cleaning rates of approximately 16 sq. ft. /hr. for removal of the fouling and coating to bare metal were obtained with this technique. The horsepower requirement corresponding to this rate of removal was approximately 22 hp. The results of the initial technical feasibility evaluation defined various design parameters such as removal rates, area covered, nozzle size, loss coefficient, operating pressure, intensity of erosion, jet velocity, and horsepower requirements. Specific nozzle designs were evaluated with the intensity of erosion established as a function of nozzle distance. A threshold intensity of erosion design chart has been characterized for barnacle removal. This chart identifies the margin of safety between the peak intensity of erosion and the threshold intensity for the steel substrate material. For the optimum operating conditions, cleaning rates were established for the removal of the marine growth and epoxy vinyl coating.

NTIS/PS-79/0417/0GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Highway and Freeway Planning: Social and Economic Effects (A Bibliography with Abstracts).
Rept. for 1964-May 79,
Edith Kenton. May 79, 114p*
Supersedes NTIS/PS-78/0449, and NTIS/PS-77/0442.

Descriptors: *Bibliographies, *Highway planning, Sociometrics, Econometrics, Social effect, Economic impact, Freeways, Urban areas, Rural areas, Right of way acquisition, American Indians, Community relations, Benefit cost analysis, Attitude surveys, Public opinion, Urban planning, Citizen participation, Urban transportation, Urban sociology, Quality of life, Land acquisition, Community development, Land use, Highway transportation, Relocation, Eminent domain, Real property.
Identifiers: Appalachia, Indian reservations, Property values, Highway corridors.

The reports cited in the bibliography deal with various socioeconomic facets associated with development of highways and arterial roads in urbanized and rural areas. Subjects include right of way acquisition and homeowner displacement, public attitudes, social impact on residential areas, economic aspects, and benefit cost analysis. Economic impacts are noted on local areas, such as Indian reservations, Appalachia, and villages. A number of local community studies are included for comparative purposes. (This updated bibliography contains 106 abstracts, 12 of which are new entries to the previous edition.)

NTIS/PS-79/0418/8GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
BART and METRO--Rapid Transit for the San Francisco and Washington, DC. Areas (A Bibliography with Abstracts).
Rept. for 1964-May 79,
Edith Kenton. May 79, 337p*
Supersedes NTIS/PS-78/0392, NTIS/PS-77/0372, NTIS/PS-76/0425, and NTIS/PS-75/421.

Descriptors: *Bibliographies, *Rapid transit railways, *Urban transportation, Passenger transportation, Systems engineering, Subway railways, California, *District of Columbia, Maryland, Virginia, Abstracts, Policies, Planning, Railroad cars, Railroad stations, Public relations, Attitudes, Financing, Maintenance, Revenue, Human factors engineering, Travel, Transportation noise, Regulations.
Identifiers: *Bay Area Rapid Transit, *San Francisco(California), Commuters, *Metropolitan Washington transit system.

The two-section bibliography is devoted to the development of rapid rail mass transportation in two major metropolitan areas. The first section contains citations referring to BART, the San Francisco Bay area rapid transit system in California. Section two refers to the combined subway and surface transit system for the District of Columbia and outlying areas in Maryland and Virginia. Materials in both sections cover line siting, policies and planning, cars and power systems, stations and trackwork, human factors, travel patterns, and public attitudes. Attention is given to financing, revenue, maintenance, local impact, and environmental impact, as well as fare collection, noise, and legislation. Local and regional needs are discussed. (This updated bibliography contains 328 abstracts, 25 of which are new entries to the previous edition.)

NTIS/PS-79/0423/8GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Financing Urban Transportation. Part 1. General Studies (A Bibliography with Abstracts).
Rept. for 1970-May 79,
Edith Kenton. May 79, 95p*
Supersedes NTIS/PS-78/0428, NTIS/PS-77/0379, NTIS/PS-76/0231, and NTIS/PS-75/200.

Descriptors: *Bibliographies, *Urban transportation, *Financing, Financial management, Methodology, Mass transportation, Bus lines, Subway railways, Rapid transit railways, Systems engineering, Cost analysis, Urban areas, Management methods, Revenue, Municipalities, Problem solving.
Identifiers: Fare structures, Personal rapid transit, Transit companies.

Financing methods are presented to show the various ways in which urban transportation systems can be supported by communities, metropolitan areas, and regions. Systems such as bus lines, subways, rapid rail, and taxis are discussed, as well as dial-a-ride operations and transit for the elderly. Some attention is given to urban airports, fare structures, and ridership. A few case studies are reported for specific cities if they would be of general interest to other areas. (This updated bibliography contains 86 abstracts, 5 of which are new entries to the previous edition.)

NTIS/PS-79/0424/6GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Financing Urban Transportation. Part 2. Local Studies (A Bibliography with Abstracts).
Rept. for 1970-May 79,
Edith Kenton. May 79, 193p*
Supersedes NTIS/PS-78/0429, NTIS/PS-77/0380, NTIS/PS-76/0232, and NTIS/PS-75/201.

Descriptors: *Bibliographies, *Urban transportation, *Financing, *Municipalities, Subway railways, Rapid transit railways, Bus lines, Financial management, Planning, Revenue, Operating costs, Georgia, California, Wisconsin, Maryland, Minnesota, District of Columbia, New York, Texas, Wisconsin, Pennsylvania, Airports.
Identifiers: Dial a ride, Taxicabs, Fare structures, Atlanta(Georgia), New York City(New York), Philadelphia(Pennsylvania), Houston(Texas), Baltimore(Maryland), San Francisco(California), Minneapolis(Minnesota), Milwaukee(Wisconsin), Transit buses, Transit companies, Shared ride taxi systems, Local studies.

The financing of urban transportation in local areas is documented. Although these studies may be of interest to a number of metropolitan localities, they were originally prepared to study the fiscal planning of transit and travel systems for specific areas. Cities covered include Atlanta, New York City, Washington, D. C., Philadelphia, Houston, Baltimore, San Francisco, Minneapolis, Milwaukee, and many smaller localities. Among the systems involved are rapid transit rail, bus, shared taxicab, dial-a-bus, dial-a-ride, and subway. Some attention is given to metropolitan airports. (This updated bibliography contains 184 abstracts, 8 of which are new entries to the previous edition.)

NTIS/PS-79/0425/3GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Highway Markings (A Bibliography with Abstracts).
Rept. for 1964-May 79,
Edith Kenton. May 79, 135p*
Supersedes NTIS/PS-78/0393, NTIS/PS-77/0280, NTIS/PS-76/0294, and NTiS/PS-75/122.

Descriptors: *Vehicular traffic control, *Pavements, *Markers, *Bibliographies, Roads, Paints, Beads, Marking, Traffic safety, Reflectors, Visibility, Abstracts, Thermoplastic resins, Field tests.
Identifiers: *Pavement markings, Highway markings, Traffic lane markings, Highway edge striping, Retroreflectors, Highway paints, Road markings, Raised pavement markings, Reflectorized pavement markings.

Information is cited on highway paints and painting, zone markings, pavement striping, traffic lane markings, roadway edge markings, and road stripes. Discussions are made of retroreflective buttons, beaded stripes, paint properties and composition, wet road conditions, night visibility, pavement properties, weathering, thermoplastics, and other materials. Attention is also given to motorist behavior and traffic safety. (This updated bibliography contains 126 abstracts, 25 of which are new entries to the previous edition.)

NTIS/PS-79/0429/5GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Guideway Transportation (A Bibliography with Abstracts).
Rept. for 1964-May 79,
Edith Kenton. May 79, 191p*
Supersedes NTIS/PS-78/0402, and NTIS/PS-77/0373.

Descriptors: *Bibliographies, *Urban transportation, Automatic control, Rapid transit railways, Monorail railways, Computer programming, Tubes, Traffic safety, Passenger transportation, Mathematical models, Optimization, Design criteria, Dynamics, Comfort, Passenger vehicles, Stations, Ramps, Traffic control, Electronic control, Spacing, Speed control.
Identifiers: Computer aided control, Personal rapid transit, People movers, Ride quality, Demand activated transportation systems, *Guideway transportation, Guideways, High speed ground transportation, Automated transportation systems, Bag-

gage, Point follower control, Vehicle follower control, Vehicle merging, Automated guideway systems, Light rail transit, Magnetic levitation.

The bibliography cites research on automated guideway transportation (AGT), in which passengers or freight can be transported along tubes or rails under automatic control. The carriers, termed personal rapid transit vehicles or people movers, can accommodate individuals or small or larger groups. The reports cover many aspects of technology, such as demand actuated service, networks, elevated structures, monorail, light rail, computer aided control, vehicle merging, headway safety, shuttle loops, guideway designs, magnetic levitation, suspended vehicles, and dual mode. Discussions are made of steering control, ride quality, airport services to move people or baggage, gravity assistance in accelerating and braking, test vehicles, and maintenance. Other topics are cost comparisons of AGT with conventional transit, fares, and equipment failure. Air cushion vehicles are excluded. (This updated bibliography contains 185 abstracts, 28 of which are new entries to the previous edition.)

NTIS/PS-79/0430/3GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Highway Safety Structures (A Bibliography with Abstracts).
Rept. for 1964-May 79,
Edith Kenton. May 79, 170p*
Supersedes NTIS/PS-78/0401, NTIS/PS-77/0393, and NTIS/PS-76/0295.

Descriptors: *Bibliographies, *Highways, *Safety engineering, *Structural forms, Barriers, Traffic safety, Accident prevention, Markers, Medians(Dividers), Safety devices, Reflectors, Shock absorbers, Drums(Containers), Breakaway structures, Poles(Supports), Highway lighting, Concrete structures, Plastic deformation, Energy absorption, Warning systems, Collision research.
Identifiers: Highway signs, Crash cushions, Curbs, Guardrail systems, Bridge parapets, Sign supports, Bridge railings, Median barriers, Highway safety.

Documentation is made of various structures and mechanical devices for promoting highway safety. Reports pertain to highway signs and displays, barriers, medians, breakaway poles and supports, crash cushions, parapets, guard rails, curbs, and fences. Discussions are presented of impact attenuators, arrester beds, and other safety appurtenances. Also noted are median grates, redirecting curbs, and other installations. Some attention is given to tests and methodology. (This updated bibliography contains 164 abstracts, 41 of which are new entries to the previous edition.)

NTIS/PS-79/0434/5GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
City Redevelopment (A Bibliography with Abstracts).
Rept. for 1964-May 79,
Edith Kenton. May 79, 149p*
Supersedes NTIS/PS-78/0427, NTIS/PS-77/0408, NTIS/PS-76/0321, and NTIS/PS-75/301.

Descriptors: *Bibliographies, *Urban renewal, *Urban planning, Central city, Municipalities, Blighted areas, Renovating, Transportation management, Housing planning, Community development, Neighborhoods, Upgrading, Streets, Houses, Economic development, Citizen participation, Employment, Business, Technical assistance, Federal assistance programs.
Identifiers: Slum clearance, Central business districts, Open space studies, Abandoned housing, Environmental quality, Job creation, Urban redevelopment.

Information is given on the revitalization and renewal of cities. Transportation planning, housing improvement, community development, neighborhood upgrading, and industrial programs are documented. Much attention is given to the central business district. Projects are reported for a few specific cities, and discussions are made of Federal programs, financing, trends, and tax incentives. Other topics include blighted areas, historic site preservation, and open space and park studies, as well as abandoned dwellings, migration problems, slum clearance, and street maintenance. (This updated bibliography contains 143 abstracts, 38 of which are new entries to the previous edition.)

NTIS/PS-79/0448/5GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Effects of Land Use and Urbanization on Water Resources and Water Quality. Volume 2. 1977-May, 1979 (A Bibliography with Abstracts).
Rept. for 1977-May 79,
Edward J. Lehmann. May 79, 122p*
Supersedes NTIS/PS-78/0488, NTIS/PS-77/0420, NTIS/PS-76/0369, NTIS/PS-75/401, and COM-73-11695. See also Volume 1, 1971-1976, NTIS/PS-78/0487.

Descriptors: *Bibliographies, *Land development, *Water resources, *Urbanization, *Land use, Regional planning, Urban planning, Benefit cost analysis, Surface water runoff, Recreation, Water supply, Flood control, Water pollution, Water quality management, Government policies.

General studies on the effects of land use and urbanization on water supply and water quality are presented. Reports on specific localities are included, if they may be applied to other areas. These citations not only include local, state, and national government policies and planning affecting land development, but also basic research on the relationship between land use and water quality management. (This updated bibliography contains 116 abstracts, 37 of which are new entries to the previous edition.)

N79-19310/8GA PC **A02**/MF **A01**
Delft Hydraulics Lab. (Netherlands).
Gate Edge Suction as a Cause of Self-Exciting Vertical Vibrations.
P. A. Kolkman, and A. Vrijer. Nov 77, 10p PUBL-188
Conf-Presented at the 17TH Congr. Of the Intern. Assoc. For Hydraulic Res., Baden-Baden, 15 - 19 Aug. 1977.

Descriptors: *Gates(Openings), *Self induced vibration, *Suction, *Vertical motion, Flow distribution, Pressure distribution, Variations.
Identifiers: Netherlands, *Hydraulic structures.

For abstract, see STAR 1710

N79-19476/7GA PC **A06**/MF **A01**
National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
Process Air Quality Data.
Final Technical Report, Jan. 1977 - Mar. 1978.
C. M. Butler, and J. E. Hogge. Mar 78, 112p
Grant NSG-1375

Descriptors: *Air quality, *Air sampling, Computer programs, *Data processing, Pollution control, Atmospheric scattering, Meteorological parameters, Periodic variations, Statistical analysis, Time series analysis.
Identifiers: *Air quality data, Tables(Data), Air pollution.

For abstract, see STAR 1710

PB-292 645/9GA PC **A08**/MF **A01**
Lockheed Missiles and Space Co. Inc., Sunnyvale, CA.
The Development of a Microwave Radiometer for Use as a Highway Ice Detector.
Final rept. Sep 77-Aug 78,
S. Berinsky, H. K. Hong, T. H. Lee, and W. T. Schrader. Sep 78, 152p FHWA/RD-78/203
Contract DOT-FH-11-9328

Descriptors: *Warning systems, *Bridge decks, *Radiometers, *Ice formation indicators, Hazards, Microwave equipment, Snow, Ice, Slush, Motor vehicle operators, Highways.
Identifiers: *Ice detectors.

The program objective was to develop a system capable of detecting snow, ice, frost, or slush over a highway bridge deck area greater than 4 x 2 feet (1.2 x 0.6 m) and generate a valid alarm signal to warn motorists of a hazard. The detection system selected was a microwave radiometer operating at 10 GHz which continuously samples a reference noise source and internal amplifier noise to provide measurement corrections of radiated power received from the road surface being observed. Principal radiometer components are: rectangular horn antenna; sensitive receiver; and signal processor/alarm unit. The successive program phases were: (1) design optimization and system tradeoffs; (2) breadboard model laboratory and field tests; and (3) prototype model design, fabrication and test. Test results on asphalt and concrete roadway simulators, as well as actual asphalt roads, correlated with previously published radiometric temperatures for similar surfaces. The following road conditions were detectable: dry/warm; dry/cold; wet; slush; ice layer (0.1 cm minimum); and snow layer (1 cm minimum). All road hazard detection objectives were met except for frost detection. Descriptions of recommended additional effort are presented, including detailed evaluation of the prototype model; advanced alarm logic; self-test techniques; and a scanning antenna to cover increased road areas.

PB-293 085/7GA PC **A05**/MF **A01**
Washington State Dept. of Ecology, Olympia. Air Programs Div.
Washington State Air Monitoring Data for 1977.
Jun 78, 83p DOE-78/7

Descriptors: *Air pollution, *Washington(State), Monitoring, Sites, Particles, Sulfur dioxide, Ozone, Carbon monoxide, Standards, Graphs.
Identifiers: *Air quality data.

Contents:
Control agencies;
Location of monitoring sites;
Non-attainment areas;
Sampling procedures;
Air quality standards;
Telemetry system;
Station coding;
Meteorological highlights;
Climatological summary;
Summary of data by pollutant.

PB-293 106/1GA MF **A01**
Environmental Monitoring and Support Lab., Research Triangle Park, NC.
Air Quality Data for Metals 1975 from the National Air Surveillance Networks.
Final rept.,
Raymond C. Rhodes, Donald H. Fair, J. E. Frazer, S. J. Long, and W. A. Loseke. Oct 78, 117p EPA/600/4-78/059
See also report dated Aug 76, PB-260 905.Portions of this document are not fully legible.
Microfiche copies only.

Descriptors: *Air pollution, *Metals, *Particles, Tables(Data), Urban areas, Rural areas.
Identifiers: *Air quality data, *National Air Surveillance Networks.

Particulate pollutant data gathered during calendar year 1975 by the cooperating stations of the National Air Surveillance Networks provide the basis for listing the urban and nonurban concentrations of 11 metallic components of suspended particulate matter. The data are presented as a composite concentration value for each site for each of the four quarters of the calendar year; a yearly average is reported whenever valid data for all four quarters were obtained.

PB-293 115/2GA PC **A05**/MF **A01**
California State Dept. of Transportation, Sacramento. Div. of Transportation Planning.
National Transportation Study, 1974. Reports of Participating State Agencies. Volume II.
Jul 74, 85p
See also Volume 3, PB-293 116.

Descriptors: *Transportation, Air transportation, Highway transportation, Mass transportation, Water transportation, Reviews, Forecasting, California.
Identifiers: Transportation planning.

The report discusses the Division of Aeronautics and its responsibilities in fulfilling the State's role in aviation. The discussion delineates the relationship of Aeronautics with the other components of the California Department of Transportation (Caltrans) and provides information regarding total activities of the Division. Goals and objectives are

also discussed. Included in the report are short narratives or several individual parts of the National Transportation Study as it relates to aviation in California, comments on the 1972 Inventory and the 1990 Plan and a discussion on the sources of funds for aviation planning and development in California. The California Division of Highways presents 1972 Inventory, 1980 Program, 1990 Plan, and Narrative Report. The first 3 elements describe the transportation systems as of 1972, 1980 and 1990, respectively. The Narrative Report discusses policy, source of funds, and low and non-capital alternatives. The Division of Mass Transportation views the study as a means to evaluate the public transportation planning capabilities of the various regional agencies. Standards are being developed by the Division for public transportation levels of service. Standards will be available for subsequent studies. The application of the standards will depend upon subsequent State policies. The Department of Navigation and Ocean Development has exercised a coordinating role between CALTRANS, the Metropolitan Transportation Commission, and the Southern California Association of Governments in connection with the waterborne element of the National Transportation Study. The Department has not dealt directly with the ports in the study. California ports are solely instruments of local government and have traditionally operated independently and resistance to any suggestions of State or Federal involvement in port affairs, except insofar as the State of Federal Governments may be of financial assistance, can be expected. California ports are capable of supporting the present level of waterborne commerce and can readily be expanded to accommodate the volume of waterborne commerce projected for 1990. No California port, however, can accommodate super tankers or the largest bulk carriers. Offshore moorings will be increasingly used by the petroleum industry, together with existing port facilities. While channels at Los Angeles/Long Beach could be dredged to greater depths, the channels in San Francisco Bay cannot readily be dredged beyond the depths currently authorized.

PB-293 116/0GA PC **A20**/MF **A01**
California State Dept. of Transportation, Sacramento. Div. of Transportation Planning.
National Transportation Study, 1974. Reports of Urban Agencies. Volume III.
Jul 74, 464p
See also Volume 2, PB-293 115.Portions of this document are not fully legible.

Descriptors: *Urban transportation, Urban areas, Services, Evaluation, Objectives, Policies, Grants, Revenue, California.
Identifiers: Transportation planning, Kern County(California).

Kern COG served as lead agency for the study. CAL/Trans District 06 prepared the street and highway forms and data, working closely with the cities in the area and with County of Kern departments. The study indicated that in order to meet the estimated 1990 need, fifty-four busses costing approximately $1.9 million will be required; that 1,037 miles of highways costing $112.7 million will be required; and that airport improvements costing $48.6 million will be required. The total estimated transportation expenditure by 1990 is $165.9 million. Kern COG's adopted areawide transportation goals and objectives are to achieve a safe, efficient, and balanced system of transportation facilities capable of serving the needs of all the citizens.

PB-293 145/9GA PC **A05**/MF **A01**
Iowa State Univ., Ames. Dept. of Agricultural Economics.
Movement of Pesticides and Nutrients with Water and Sediment as Affected by Tillage Practices: A Field Study.
Completion rept.,
James L. Baker, and Howard P. Johnson. Mar 78, 94p W79-05050, OWRT-A-050-IA(1)
Contract DI-14-31-001-5015
Prepared in cooperation with Iowa State Water Resources Research Inst., Ames.

Descriptors: *Surface water runoff, *Pesticides, *Fertilizers, *Cultivation, *Water pollution abatement, Sampling, Corn plants, Nitrogen, Phosphorus, Concentration(Composition), Chlorine organic compounds, Nitrogen heterocyclic compounds, Phosphorus organic compounds, Soil erosion, Plant residues(Organic), Sediments, Field tests, Iowa.
Identifiers: *Path of pollutants, *Agricultural watersheds, Atrazine, Triazine/chloro-ethylamino-isopropylamino, Lasso, Acetanilide/chloro-diethyl-N-(methyoxymethyl), Bladex, Propionitrile/(chloro-ethylamino-triazenylamino)-methyl, Dyfonate, Phosphonodithioic acid/(ethyl-ester)-phenyl-ethyl.

Two conservation tillage systems were studied and compared with the conventional (plow-disk-plant) tillage system. Runoff, soil loss, nutrient losses, and pesticide losses during the 1972-75 growing seasons were measured for six small paired watersheds planted to continuous corn. The ridge-plant system had over 50% of the surface covered with residue, the till-plant system 11%, and conventional system less than 2%. Conservation tillage systems on the average reduced runoff about 40% and reduced soil loss 60 to 90%. Total losses of nitrogen and phosphorus (total P in sediment measured only in 1973) were mostly associated with soil loss and consequently were decreased for conservation tillage systems. Solution phosphorus losses and concentrations and available P concentrations in sediment (measured in 1974 and 1975) increased with residue cover. Fonofos, atrazine, alachlor, and cyanazine losses on the average were reduced by conservation tillage, although pesticide concentrations in sediment and/or water were sometimes higher. About one-half of the average fonofos losses were with water, whereas from 80 to 90% of the average herbicide losses were with water.

PB-293 146/7GA PC **A02**/MF **A01**
Illinois State Water Survey, Urbana.
Development and Evaluation of a Two-Step Membrance Filter Method for Fecal Coliform Recovery in Chlorinated Sewage Effluents.
Rept. of investigation,
S. D. Lin. 1978, 21p ISWS/RI-87/78, W79,-05012
Prepared in cooperation with Illinois Dept. of Registration and Education, Springfield.

Descriptors: *Sewage treatment, *Membranes, *Coliform bacteria, Chlorine organic compounds, Performation evaluation, Filtration, Methodology, Comparison.

The standard one-step M-FC broth membrane filter (MF) procedure for recovery of fecal coliform (FC) in chlorinated wastewater effluents is much less effective than the multiple-tube (most probable number, MPN) technique. A two-step MF method was developed. The results of 126 comparisons using chlorinated effluents from five wastewater plants showed that FC recovery with the two-step MF method is comparable to that with the MPN procedure. In the development of the two-step MF method for FC recovery in chlorinated effluents, only the Millipore HC filters were used. Literature shows that different bacteria recovery capabilities are reported for various membranes. Therefore, nine other types of membranes were compared with Millipore HC for their fecal coliform recovery in chlorinated effluents from the five wastewater treatment plants. The results of 61 comparisons were analyzed by Duncan's multiple range test.

PB-293 147/5GA PC **A03**/MF **A01**
New Hampshire Univ., Durham. Water Resources Research Center.
Fate of Metal Ions during Domestic Treatment of Water Containing Organics.
Research rept.,
James H. Weber, and Ralph E. Truitt. Feb 79, 37p RR-21, W79-05046, OWRT-A-046-NH(1)
Contract DI-14-31-0001-3829
Prepared in cooperation with New Hampshire Univ., Durham. Dept. of Chemistry.

Descriptors: *Water treatment, *Metals, *Organic compounds, *Coagulation, Ions, Potable water, Trace elements, Filtration, pH, Concentration(Composition), Alums, Fulvic acids, Copper, Cadmium, Zinc.

Preliminary to water treatment experiments, the authors tested several filter media to determine Cd(+2) losses during filtration at pH 8. The initial concentrations of Cd(+2) were 4.5 and 45 ppb. Various filtering materials sorb different amounts of Cd(+2) from solution as a function of their surface area and the speed of filtration. Polycarbonate filter membranes in combination with a polycarbonate support apparatus gave the lowest Cd(+2) losses when the filtrate is collected directly in a volumetric flask. The effectiveness of Cu(+2), Cd(+2), and Zn(+2) removal from solution by alum coagulation was measured with fulvic acid present and absent. A factorial experimental design and analysis of variance were used to determine the effect on metal ion removal of the individual variables pH, metal ion concentration, alum concentration, and fulvic acid concentration and their combinations. The variable levels model water treatment plant conditions. Maximum metal ion losses of 96% for Cu(+2), 59% for Cd(+2), and 82% for Zn(+2) were measured in the presence of fulvic acid. In its absence the maximum metal ion losses observed were 93% for Cu(+2), 14% for Cd(+2) and 53% for Zn(+2). Fulvic acid enhances metal ion removal under most experimental conditions. The practical implications of the results is that strong complexes between natural water organic matter and metal ions enhance their removal by the alum coagulation process.

PB-293 155/8GA PC **A03**/MF **A01**
Battelle Columbus Labs., OH.
Characterization of Priority Pollutants from a Secondary Lead and Battery Manufacturing Facility.
Final rept.,
Eugene J. Mezey. Jan 79, 44p BATT-G-6617-0601, EPA/600/2-79/039
Contract EPA-68-03-2552

Descriptors: *Water pollution, *Lead(Metals), *Electric batteries, *Industrial wastes, Calcium oxides, Concentration(Composition), Benzene, Cyanides, Phenols, Design criteria, Sampling.

A plant site at which secondary lead is produced from old batteries was sampled utilizing the U.S. EPA protocol for the priority pollutants. The waste treatment plant at this site uses lime and settle techniques to remove pollutants from the wastewater before it is discharged into a stream. The results of the study show that the concentration of benzene and cyanides were below their detection limits in all of the streams sampled. Further, the concentrations of phenols were below their detection limit in both the influent and effluent of the treatment plant. The results of the study also show that the lime and settle treatment practiced at this site removes in excess of 90 percent of the lead, mercury, and zinc. The technique is slightly less effective for copper and cadmium because of their low concentrations in the influent to the treatment plant. Nevertheless, in excess of 70 percent of both copper and cadmium was removed. Because of the extremely low concentrations of antimony, chromium, and nickel in the influent to the treatment plant, the effectiveness of the lime and settle treatment for the removal of these metals could not be evaluated with any degree of confidence.

PB-293 160/8GA PC **A04**/MF **A01**
Environmental Monitoring and Support Lab., Las Vegas, NV.
Energy-Related Air Quality Monitoring in the Western Energy Resource Development Area,
M. L. Pitchford, R. N. Snelling, J. Bowen, M. Pearson, and D. N. McNelis. Nov 78, 62p EPA/600/7-78/227

Descriptors: Monitoring, Electric power plants, Oil shale, Instrumentation, Fossil fuels, Coal, Arizona, Colorado, Montana, New Mexico, North Dakota, South Dakota, Utah, Wyoming.
Identifiers: *Air pollution sampling, *Environmental monitoring, Energy source development, Western Region(United States), Particulates.

This report describes a program designed to create an environmental data base which will be used to assess the air quality impact of energy development in an eight-state region (Arizona, Colorado, Montana, New Mexico, North Dakota, South Dakota, Utah, Wyoming). The program was designed to use and augment existing monitoring activities as well as create new monitoring systems. Some of the activities described are an airborne air quality monitoring system, a regional particulate

sampling network, a quality assurance program, a visibility monitoring system, an air quality simulation modeling program, and a program to investigate weather modification effects of energy-related pollutants.

PB-293 163/2GA PC **A09**/MF **A01**
Aerospace Corp, Los Angeles, CA. Environment and Energy Conservation Div.
Disposal of By-Products from Nonregenerable Flue Gas Desulfurization Systems.
Final rept. Dec 72-Mar 78,
J. Rossoff, R. C. Rossi, R. B. Fling, W. M. Graven, and P. P. Leo. Feb 79, 183p EPA/600/7-79/046
Contract EPA-68-02-1010
See also report dated May 77, PB-271 728.

Descriptors: *Air pollution control, *Sludge disposal, Scrubbers, Byproducts, Flue gases, Solid waste disposal, Substitutes, Feasibility, Dewatering, Technology, Oxidation, Gypsum, Leaching, Performance evaluation, Cost analysis, Water pollution, Chemical properties, Physical properties, Ponds, Earth fills, Calcium oxides.
Identifiers: Limestone scrubbing, Double alkali process.

The report gives results of a 4-year study to determine environmentally sound methods for disposing of wastes from nonregenerable flue gas desulfurization (FGD) systems. Data presented incorporates results obtained during the fourth year with material from report EPA-600/7-77-052, covering the first 3 years of the study. Untreated and treated wastes from 10 different scrubbers at eastern and western plants using lime, limestone, and double-alkali processes were characterized. The report relates concentrations of salts and trace elements in the wastes to the potential for water pollution. Physical properties (e.g., bulk density, load bearing strength, permeability, and viscosity) are given. Disposal by ponding, landfilling of chemically fixed wastes, ponding with underdrainage, and conversion to gypsum was assessed. Disposal cost estimates for a 1000-MW eastern plant are 0.55, 0.90, and 1.20 mills/kWh for ponding on indigenous clay, ponding with liner added, and chemical treatment/landfill, respectively. Companion studies, pertaining to field disposal evaluations and a summary of all EPA projects related to FGD waste and water studies, have been reported separately.

PB-293 164/0GA PC **A06**/MF **A01**
Rockwell International, Creve Coeur, MO. Environmental Monitoring and Services Center.
Regional Air Pollution Study, Emission Inventory Summarization.
Final rept.,
Fred E. Littman. Jan 79, 103p EPA/600/4-79/004
Contract EPA-68-02-2093

Descriptors: *Air pollution, Inventories, Hydrocarbons, Sulfur trioxide, Particle size distribution, Regional planning, Metropolitan areas, Sources, Exhaust emissions, Residental buildings, Combustion products, Commercial buildings, Missouri.
Identifiers: Saint Louis(Missouri), Area sources, Point sources, Fugitive emissions, Regional Air Pollution Study.

As part of the Regional Air Pollution Study (RAPS), data for an air pollution emission inventory are summarized for point and area sources in the St. Louis Air Quality Control Region. Data for point sources were collected for criteria and noncriteria pollutants, hydrocarbons, sulfur trioxide, particle size distribution, and heat. For area sources, data were collected on criteria pollutants, hydrocarbons and heat. All the data have been entered into the RAPS Data Bank. Hourly values are available for all point sources; locations are identified by UTM coordinates (zone 15) to within + or - 10 m. Area sources are assigned to a network of 1989 grid squares of variable size. The emission inventory is applicable for the years 1975 and 1976 and complements the RAPS aerometric data.

PB-293 166/5GA PC **A11**/MF **A01**
Kentucky Bureau of Highways, Lexington. Div. of Research.
Pavement Evaluation Using Road Rater Deflections.
Interim rept.,
Gary W. Sharpe, Herbert F. Southgate, and Robert C. Deen. Aug 78, 249p RR-501

Descriptors: *Flexible pavements, *Bituminous concretes, *Deflection, Nondestructive tests, Pavement bases, Modulus of elasticity, Field tests, Graphs(Charts), Kentucky.
Identifiers: Road raters.

Dynamic test deflections have been duplicated by elastic theory using the Chevron N-layered computer program. Dynamic surface deflections obtained using the Road Rater have been used in conjunction with elastic theory to analyze pavement behavior. A procedure has been developed to use field measured Road Rater deflections to estimate the elastic moduli of the foundation material and to determine the equivalent thicknesses of new material which approximate the behavior of the structure. The estimated moduli and (or) equivalent thicknesses may be used as inputs to design overlay thicknesses. An analysis of the deflections of the first three sensors of the Road Rater also makes it possible to distinguish weaknesses in asphaltic concrete layers from weaknesses in the supporting foundation.

PB-293 172/3GA PC **A06**/MF **A01**
Texas A and M Univ., College Station.
Pyrogenic Activity of Carbon-Filtered Waters.
Final rept.,
Harold W. Wolf, Bennie Joe Camp, and Scott J. Hawkins. Feb 79, 125p EPA/600/1-79/009
Grant EPA-R-804420
Prepared in cooperation with Texas Univ. Health Science Center at San Antonio.

Descriptors: *Water treatment, *Activated carbon, *Pyrogens, Potable water, Filtration, Samples, Comparison, Organic compounds, Biochemical oxygen demand, Disinfection, Adsorption, Public health, Lipopolysaccharides.
Identifiers: Chemical oxygen demand, *Endotoxins, Toxic substances, Drinking water.

The endotoxin content and pyrogenic response of granular activated carbon (GAC) filtered waters were studied. GAC-filtered secondary effluent from an activated sludge pilot plant contained free endotoxins in the range 6-250 micrograms/l yielding positive pyrogenic responses in 18 of 20 trials. Samples obtained from 27 different water supplies in the U.S. that utilize GAC adsorption contained free endotoxin ranging from 1.2-25 micrograms/l but none gave a pyrogenic response. No relationship was discernible between endotoxin content and pyrogenic response. Small removals of total organic carbon (TOC) by GAC beds which had been in operation in water treatment plants without regeneration for as long as 110 months were observed. However, 5 of 28 samples showed an increase in TOC through GAC and 8 of 28 samples showed an increase in standard plate count. One of 25 samples yielded pseudomonads, but none of the 28 samples contained coliforms. Good correlations were observed on non-disinfected AWT effluent samples between standard plate count and total endotoxin ($r = 0.945$), standard plate count and free endotoxin ($r = 0.932$), and total coliforms and free endotoxin ($r = 0.939$). Lack of good correlations, however, were observed in assaying AWT samples that had been subject to the disinfecting procedures of chlorination, ozonation, pH or UV irradiation.

PB-293 177/2GA PC **A03**/MF **A01**
ENSCO, Inc., Springfield, VA. Transportation and Instrumentation Sciences Div.
Computer Evaluation of Pavement Texture. Volume I. Summary Report.
Final rept. Jul 76-Mar 78,
E. D. Howerton, and T. J. Rudd. Mar 78, 46p 1120-VOL-1, FHWA/RD-78/36
Contract DOT-FH-11-9117
See also Volume 2, PB-293 178.
Also available in set of 4 reports PC E11, PB-293 176-SET.

Descriptors: *Pavements, *Texture, Surface properties, Friction, Measurement, Skid resistance, Flexible pavements, Profiles, Safety, Mathematical models, Predictions, Gradients.
Identifiers: Computer applications, Speed.

The report describes a research study involving computerized evaluation of pavement texture. The central objective of the evaluation was to identify relationships between the surface texture and the frictional characteristics of pavements and to identify instrumentation systems that have the capability of measuring texture parameters at highway speeds. The two instrumentation systems that were extensively evaluated for capability to predict pavement friction from texture measurements were the light depolarization detection system and the Schonfeld stereophotographic interpretation system. Neither system yielded measurements of pavement texture which correlated highly enough with the frictional properties of pavements to make them practical prediction tools. A third system based on a noncontact laser profiling instrument was also evaluated, but it was found to have inherent limitations concerning resolution capability and complexity required for field implementation. Strong correlations relating the percent normalized gradient (PNG) to sand patch texture depth and other profile texture descriptors were identified. These results are extremely powerful for quantifying the variations of skid number with speed based on a single texture descriptor and the skid number of the pavement at a given speed. A computer program was developed for implementing this result.

PB-293 178/0GA PC **A06**/MF **A01**
ENSCO, Inc., Springfield, VA. Transportation and Instrumentation Sciences Div.
Computer Evaluation of Pavement Texture. Volume II. Technical Report.
Final rept. Jul 76-Sep 77,
E. D. Howerton, T. J. Rudd, and R. E. Sutermeister. Oct 77, 111p 1120-VOL-2, FHWA/RD-78/37
Contract DOT-FH-11-9117
See also Volume 1, PB-293 177 and Volume 3, PB-293 179.
Also available in set of 4 reports PC E11, PB-293 176-SET.

Descriptors: *Pavements, *Texture, Surface properties, Friction, Measurement, Skid resistance, Flexible pavements, Profiles, Safety, Mathematical models, Predictions, Gradients.
Identifiers: Computer applications.

The report describes a research study involving computerized evaluation of pavement texture. The computerized approach allowed a large data base covering a wide range of pavement textures to be evaluated from which meaningful conclusions concerning pavement texture, pavement friction, and other performance factors could be drawn. The central objective of the evaluation was to identify relationships between pavement texture characteristics and pavement friction, and to identify instrumentation systems that have the capability of measuring these texture parameters at highway speeds. The contents includes: Pavement texture instrumentation--(Light depolarization instrument, Stereophotographic system, AUTECH laser profiling system, Mechanical stylus instruments, Sand patch and pavement friction equipments); Test program--(Description of test site and Test schedule, Test program activities); Preliminary analysis of experimental data--(Pavement frictional data, Stereophotographic results, Depolarization results, Sand patch results, Profile texture data); Correlation studies; and Conclusions and recommendations.

PB-293 179/8GA PC **A08**/MF **A01**
ENSCO, Inc., Springfield, VA. Transportation and Instrumentation Sciences Div.
Computer Evaluation of Pavement Texture. Volume III. Appendices.
Final rept. Jul 76-Sep 77,
E. D. Howerton, T. J. Rudd, and R. E. Sutermeister. Oct 77, 159p 1120-VOL-3, FHWA/RD-78/38
Contract DOT-FH-11-9117
See also Volume 2, PB-293 178 and Volume 4, PB-293 180.
Also available in set of 4 reports PC E11, PB-293 176-SET.

Descriptors: *Pavements, *Texture, Surface properties, Friction, Measurement, Skid resistance,

Flexible pavements, Profiles, Safety, Mathematical models, Predictions, Gradients.
Identifiers: Computer applications.

Contents:
- Pavement Friction Data for the 20 Pavement Surfaces;
- Photographs of the 20 Pavement Surfaces;
- Schonfeld Stereophotographic Classification Data;
- Light Depolarization Data;
- Sand Patch Measurements;
- Editing Process for Laser Data;
- Profile-Derived Pavement Texture Descriptors;
- Power Spectral Density Functions.

PB-293 180/6GA PC **A07**/MF **A01**
ENSCO, Inc., Springfield, VA. Transportation and Instrumentation Sciences Div.
Computer Evaluation of Pavement Texture. Normalized Percent Skid Gradient Algorithm for Computing the Speed Dependence of Skid Number. Volume IV. Computer Program Documentation.
Final rept. Jul 76-Sep 77,
R. E. Sutermeister. Oct 77, 147p 1120-VOL-4, FHWA/RD-78/39
Contract DOT-FH-11-9117
See also Volume 3, PB-293 179.
Also available in set of 4 reports PC E11, PB-293 176-SET.

Descriptors: *Pavements, *Texture, Surface properties, Friction, Measurement, Skid resistance, Flexible pavements, Profiles, Safety, Mathematical models, Predictions, Gradients, Algorithms.
Identifiers: Computer applications, Speed.

The normalized percent skid gradient program addresses the problem of assessing the change of skid number with respect to speed. The program uses skid number, measured at a single speed, in conjunction with a pavement texture measurement as the basis for determining skid numbers at various other speeds. Thus the program provides field personnel, who are responsible for collecting and maintaining inventories of skid number data, a means of reducing skid resistance testing from measurements at two or more speeds to testing at a single speed and collection of a pavement texture measurement. The specific function of the program is to provide skid number estimates at up to three additional speeds based on skid information at one speed together with a texture measurement. At present this is set up for bituminous pavements surveyed during the course of this study. In order to generalize the program's capability to other bases of pavement friction data and texture measurements, a number of supporting capabilities for data reduction, regression and correlation analyses, including evaluation of texture descriptors from profile data are available to the user.

PB-293 183/0GA PC **A06**/MF **A01**
Missouri Univ.-Columbia. Dept. of Civil Engineering.
Effect of Phosphorus Supply on Algal Biomass in a Turbid Missouri Reservoir.
Completion rept.,
John T. Novak, John Jones, Catherine Crisp, Norman Crisp, and Fred Cunningham. Mar 79, 113p W79-05001, OWRT-A-095-MO(1)
Contracts DI-14-34-0001-7053, DI-14-34-0001-7054
Prepared in cooperation with Missouri Water Resources Research Center, Columbia.

Descriptors: *Phosphorus, *Primary biological productivity, *Water pollution, *Lake of the Ozarks, Turbidity, Algae, Biomass, Chlorophylls, Nitrogen, Iron, Particle size, Suspended sediments, Limnology, Monitoring, Osage River, Cole Camp Creek, Big Buffalo Creek, Seasonal variations, Light(Visible radiation), Missouri.
Identifiers: Suspended solids, *Water quality data.

The objective was to determine the relationship between primary productivity and phosphorus levels in the Lake of the Ozarks. The Lake of the Ozarks is a large man-made impoundment that is fed primarily by the Osage River. Although this river contains a large quantity of phosphorus, productivity is low. This research was designed to clarify the relationship between suspended solids levels and phosphorus availability. Data obtained suggest that inorganic phosphorus entering the Lake of the Ozarks may not have as great an impact on productivity as point source inputs. Productivity is limited because of the high flushing rates in the lake and because of limited availability of bound phosphorus. The data further indicate that light availability may not be as important in turbid man-made reservoirs as the impact of silt on phosphorus availability.

PB-293 204/4GA PC **A16**/MF **A01**
Resource Management Associates, Lafayette, CA.
Mathematical Modeling of Surface Water Impoundments. Volume I and Volume II, Appendix C. Specifications of Mathematical Models and Programs,
G. T. Orlob. Jun 77, 356p RMA-6080, W79-05011, OWRT/T-0006(6706)(1)

Descriptors: *Lakes, *Reservoirs, *Water quality, *Reviews, Mathematical models, Stratification, Temperature gradients, Hydrodynamics, Linear programming, Dynamic programming, Optimization, Stochastic processes, One dimensional flow, Two dimensional flow, Lake Erie, Lake Ontario, Lake Washington.
Identifiers: *Thermal stratification, Fontana Reservoir, *Eutrophication, Listings.

A review of the state-of-the-art of mathematical modeling of surface water impoundments was conducted. Models reviewed included one-dimensional models for simulation of temperature and water quality in stratified reservoirs, two-dimensional circulation and water quality in shallow lakes, two-dimensional stratified flow, circulation in multi-layer large lakes, and eutrophication and ecological responses in lake systems. Models for simulation/optimization of single reservoir and multiple reservoir systems were also reviewed. Recommendations are made for the formation of a 'national register' of software for water resource planning and management.

PB-293 225/9GA PC **A12**/MF **A01**
GCA Corp., Bedford, MA. GCA Technology Div.
Preliminary Environmental Assessment of the Lignite-Fired CAFB.
Final rept. Jan 77-Oct 78,
A. S. Werner, C. W. Young, William Piispanen, and B. M. Myatt. Feb 79, 257p GCA-TR-78-34-G, EPA/600/7-79/048
Contract EPA-68-02-2632
Portions of this document are not fully legible.

Descriptors: *Air pollution control, *Fluidized bed processing, *Lignite, Assessments, Flue gases, Solid waste disposal, Water pollution control, Combustion products, Design criteria, Process charting, Boilers, Sulfur oxides, Nitrogen oxides, Industrial wastes, Field tests, Laboratory equipment, Economic analysis, Particles, Performance evaluation, Trace elements, Great Britain, Texas.
Identifiers: *Chemically active fluid bed process, Abingdon(England), San Benito(Texas).

The report gives results of a preliminary environmental assessment (EA) of the lignite-fired Chemically Active Fluid-Bed (CAFB) process. It follows an earlier EA of the oil-fired CAFB. Waste streams contributing air and solid waste pollutants were evaluated in terms of emission rates and potential environmental effects. Emphasis is placed on flue gas emissions. As part of the investigation, a field sampling and laboratory analysis program was carried out to compile an emissions inventory of the CAFB pilot plant at the Esso Research Centre in Abingdon, England. In addition to the EA, an economic evaluation of the oil-fired CAFB is presented relative to alternative residual oil utilization techniques. Finally, recommendations are made for further control needs and emissions testing to be carried out in conjunction with the CAFB demonstration plant in San Benito, Texas. Particulate emissions were less than those from direct combustion of lignite using multiclones as a control. NOx emissions were quite low: 0.09 lb/million Btu was the highest measured. Light organics were equal to those from conventional units; heavy (> C6) emissions were lower. SOx emissions were half the New Source Performance Standard for coal-fired boilers.

PB-293 229/1GA PC **A10**/MF **A01**
Abcor, Inc., Wilmington, MA. Walden Div.
Growth Effects of Major Land Use Projects (Wastewater Facilities). Volume II. Summary, Predictive Equations and Worksheets.
Final rept.,
Peter H. Guldberg, and Ralph B. D'Agostino. May 78, 211p C-921-VOL-2, EPA/450/3-78/014B
Contract EPA-68-02-2594
See also Volume 1, PB-280 410.

Descriptors: *Air pollution, *Urban areas, *Environmental surveys, *Land use, Mathematical models, Projects, Construction, Vehicular traffic, Sources, Environmental impacts, Statistical samples, Regression analysis, Planning.
Identifiers: Sewage treatment plants.

Growth Effects of Major Land Use Projects in a research program whose goal is to develop methodologies to predict the total air pollutant emissions resulting from the construction and operation of major land use projects. Emissions are quantified from the major project, from land use induced by the major project, from secondary activity occurring off-site (e.g., electrical generating stations), and from motor vehicle traffic associated with both the major project and its induced land uses. This report documents the development of predictive equations for the induced land use from wastewater major projects. The predictive equations are included in an impact assessment procedure that estimates the total air pollutant emissions associated with induced development from a wastewater major project.

PB-293 245/7GA PC **A05**/MF **A01**
Southern California Association of Governments, Los Angeles.
Draft SCAG-78 Growth Forecast Policy,
Dennis Masyczek, Charles Noval, John Oshimo, and Gordon Palmer. Aug 78, 92p
Grant HUD-CPA-CA-1050.305
Sponsored in part by Urban Mass Transportation Administration, Washington, DC., and California State Office of Planning and Research, Sacramento.Portions of this document are not fully legible.

Descriptors: *Regional planning, Forecasting, Populations, Housing studies, Employment, Land use, California.

The Growth Forecast policy is prepared as a major new revision in the on-going Development Guide Program at SCAG. The Development Guide Program has been in operation since 1970 providing a framework for coordinating local and regional decisions regarding growth. Approximately every two years since 1972, SCAG has adopted a Growth Forecast Policy. The Draft SCAG-78 Growth Forecast shows the SCAG region's population growing from 10.5 million in 1976 to 13.5 million in the year 2000. This represents an increase of 3 million people or 29%. The forecasted total is based on assumptions of probable migration and fertility rates and does not represent any limitation of the regional total due to policy consideration. The regional total is close to that shown by the State Department of Finance in its E-150 Forecast. The regional total represents a summation of county figures that were developed with the planning states of each county. Draft SCAG-78 was designed in the context of Committee and Hearing Board recommendations.

PB-293 249/9GA PC **A09**/MF **A01**
Massachusetts Inst. of Tech., Cambridge. Dept. of Civil Engineering.
Modeling Extreme Vehicle Loads on Highway Bridges. Structural Loads Analysis and Specifications Project.
Rept. for Jun 74-Aug 79,
Richard D. Larrabee. Sep 78, 200p R78-27
Grant NSF-ENV73-00345-A02

Descriptors: *Highway bridges, *Structural analysis, *Loads(Forces), Vehicular traffic, Simulation, Trucks, Mathematical models, Stochastic processes.

Alternative probabilistic models of the lifetime maximum load are compared for bridge spans which may be loaded by multiple vehicles. Several vehicles crossing a bridge are modeled by the

random spaces between vehicles and the random vehicle weights. Simulation tests confirm the validity of single-random-variable-per-truck models. Several stochastic models of bridge response are explored--A simulation-based model which identifies the random coincidence of multiple trucks (groups) on the bridge; a simplified version using the entire weight of a 'platoon' of trucks; and a non-simulation, discrete position (slot) model for congested traffic loading. Results from these models indicate that the congested traffic may take the dominant contribution to the extreme load event for long and even medium span bridges. A model of the contrasting free-flowing traffic may be limited to a few group sizes or a simplified lower-bound approximation.

PB-293 253/1GA PC **A10**/MF **A01**
Pennsylvania State Univ., University Park.
Characterization of Solid Constituents in Blackwater Effluents from Coal Preparation Plants.
Final rept. Jul 75-Oct 77,
P. B. Bradley, F. F. Aplan, and R. Hogg. Jan 79, 203p EPA/600/7-79/006, FE-9002-1

Descriptors: *Coal preparation, *Water pollution, Industrial wastes, Fines, Sampling, Chemical analysis, Particle size distribution, Surfaces, Froth flotation, Black liquors, Industrial waste treatment, Desulfurization, Air pollution.
Identifiers: Waste water reuse, Air pollution abatement.

The report gives results of a characterization of the fine solid constituents of coal preparation plant waste water, to provide a better understanding of how to treat the water for recycle or discharge. Thirteen waste water samples, obtained from coal preparation plants throughout the U.S., were analyzed for: identification and quantification of solid constituents, size analysis of solids, and surface properties of the solids. The study concluded that: (1) Eastern and Western coal region samples can be distinguished on the basis of mineralogy and size distribution of the solid particles; (2) the carbonaceous material of Eastern coals averages 60% of the blackwater solids, and the remaining 40% consists of clay minerals, quartz, calcite, and pyrite; and (3) virtually all of the carbonaceous material in Eastern plant waste waters can be removed by froth flotation, with the product containing 11% mineral matter.

PB-293 254/9GA PC **A06**/MF **A01**
Environmental Protection Agency, Washington, DC.
National Conference on Less Costly Wastewater Treatment Systems for Small Communities Held at Reston, VA. on April 12-14, 1977.
Final rept.
Apr 78, 118p EPA/600/9-79/010

Descriptors: *Cost effectiveness, *Sewage treatment, *Meetings, Government policies, Regulations, Ordinances, Rural areas, Licenses, Septic tanks, Sanitary sewers, Sewage disposal, Cost analysis, Maintenance, Cost comparison.
Identifiers: *Alternative planning, *Small communities, Pressure sewers.

This publication is a compilation of papers presented at the USEPA National Conference of 'Less Costly Wastewater Treatment Systems for Small Communities,' held at Reston, Virginia, on April 12, 13, and 14, 1977. The focus of the conference was on sound and economical alternatives to conventional centralized wastewater collection and treatment systems for small communities. Discussion included present governmental policy on wastewater facilities, and descriptions of major types of conveyance and treatment systems (with comparative costs). Examples were provided of successful and cost-effective installations which meet environmental requirements. Alternative organizations for maintaining and operating small facilities were also discussed.

PB-293 278/8GA PC **A17**/MF **A01**
Research Triangle Inst., Research Triangle Park, NC.
Environmental Assessment of Coke By-product Recovery Plants.
Final rept. Mar 77-Jun 78,
D. W. VanOsdell, D. Marsland, B. H. Carpenter, C. Sparacino, and R. Jablin. Jan 79, 389p EPA/600/2-79/016
Contract EPA-68-02-2630

Descriptors: *Coking, *Byproducts, *Materials recovery, *Air pollution, *Water pollution, Sources, Sampling, Storage tanks, Assessments, Aromatic polycyclic hydrocarbons, Design criteria, Technology, Cost analysis, Performance evaluation, Industrial wastes, Combustion products.
Identifiers: *Fugitive emissions.

The report gives results of an initial screening study, initiating a multimedia environmental assessment of coke by-product recovery plants in the U.S. The study included both the gathering and analysis of existing data and sampling and analysis at one plant based on EPA's Industrial Environmental Research Laboratory-RTP Level 1 protocol. Process data concerning design and operation of existing plants and processes were examined. Many variations of all process types exist, forcing an examination of the industry to determine the commoner processes. Sampling and analysis utilized a basic EPA Level 1 format, tailored for organic vapor sampling. Specific samples were also analyzed for cyanide. Air was sampled at all suspected pollution sources, most of them storage tanks. The largest single source was the final cooler cooling tower: aromatics at greater than 50 g/Mg coke and cyanide at 278 g/Mg coke were both significant. Polynuclear aromatic hydrocarbon (PAH) compounds were indicated, but not quantified. Concentrations of pollutants in the vapor above storage tanks were measured, but actual emission rates were not determined because of the difficulty in measuring working and breathing losses for the tanks sampled. Water sampling data from the same plant, developed by EPA's Effluent Guidelines Division, were included in the overall study analysis.

PB-293 290/3GA PC **A05**/MF **A01**
Georgia Inst. of Tech., Atlanta. Environmental Resources Center.
Nitrification with Rotating Biological Contactor Systems.
Technical completion rept.,
F. Michael Saunders, and Rodney L. Pope. Oct 78, 97p ERC-06-78, W79-05047, OWRT-A-058-GA(4)
Contract DI-14-31-0001-5010

Descriptors: *Nitrification, *Sewage treatment, Simulation, Nitrobacter, Nitrosomonas, Growth, Biomass, Sensitivity, Diagrams, Substrates, Hydrolysis, Nitrogen, Monitoring, Ammonia, Efficiency.
Identifiers: *Rotating disc process, Organic loading, Biofilms.

The primary objective of this research project was to examine the rotating biological contactor system and determine the effect of microorganism growth rate on the nitrification process as mediated by an attached biofilm. Initially, the objective was to determine the critical net specific growth rate, or cell residence time, at which washout of nitrifying organisms occurred and to determine the extent of the nitrification at higher values of cell residence time. A second phase was initiated to determine the effect of an organically-bound nitrogen source on nitrification. The primary purpose was to determine if hydrolysis of organically-bound nitrogen was a rate-limiting reaction and if it had any significant effect on the nitrification process. The final phase of the research project was an investigation of the effect of influent organic strength on the nitrification process. This phase was performed to determine the sensitivity of the organisms to shock loads of organic matter which may be experienced in wastewater treatment practice. Therefore using cell residence time as a primary control mechanism on microorganism growth rate, this research project examined the effect of microorganism growth rate on nitrification and the extent to which hydrolysis of organically-bound nitrogen and increased organic loadings affected nitrification.

PB-293 315/8GA PC **A10**/MF **A01**
California Univ., Santa Barbara. Marine Science Inst.
Oil Pollution Reports. Volume 5, Number 4.
Quarterly rept. Oct 78-Dec 78,
Helmut Ehrenspeck, Elizabeth Sorenson, Barbara Searles, Katherine Osteryoung, and Ivana Roland. Feb 79, 203p EPA/600/7-79/040
Grant EPA-R-805803-01-0
See also Volume 5, Number 1, PB-281 671.

Descriptors: *Oil spills, *Oil pollution, *Water pollution, *Bibliographies, Water analysis, Monitoring, Remote sensing, Sampling, Separation, Standards, Regulations, Mathematical models, Meetings, Cleaning, Sources, Transport properties, Containment, Water pollution control, Chemical analysis, Patents, Abstracts.
Identifiers: Water pollution detection, Path of pollutants, Oil pollution detection, Oil pollution removal, Contingency planning.

OIL POLLUTION REPORTS (formerly OIL SPILL AND OIL POLLUTION REPORTS) is a quarterly compilation of abstracts of current oil pollution related literature, research projects, and conferences. Comprehensive coverage of terrestrial and aquatic oil pollution and its prevention and control is provided, with emphasis on the marine environment. The report contains (a) citations and summaries of 1976 to 1978 scientific and technical publications, and patents; (b) status and summaries of current research programs; and (c) information on current meetings.

PB-293 318/2GA PC **A03**/MF **A01**
Washington Metropolitan Area Transit Authority, DC.
Annual Report, 1978.
1978, 27p WMATA-79/1
See also report dated Jan 76, PB-265 899.

Descriptors: *Transportation management, *Mass transportation, *District of Columbia, Passenger transportation, Urban transportation, Rapid transit railways, Services, Financial management, Maintenance, Operating costs, Transportation planning, Rail transportation, Subways.
Identifiers: Metropolitan Washington transit system.

The document presents the twelfth annual report of the Washington Metropolitan Area Transit Authority. The financial statements cover Fiscal Year 1978, the narrative covers calendar year 1978. The Metro service was extended into Montgomery and Prince George's counties. Service to Silver Spring and New Carrollton added 13 miles and nine stations to the operating system, for an operating total of 28.4 miles and 34 stations. Bus routes were coordinated with the expanding rail service to avoid costly duplication of transit service. Combined annual transit trips increased by 10 million, or 4.4 per cent, over 1977. Rail hours were extended to midnight and began Saturday service. Of the planned 101-mile, 86-station system, there are now 60.7 miles and 61 stations operating, completed, or under construction. The remainder is in various stages of planning and design. The Alternatives Analysis, completed this year, reconfirmed the need to complete the 100-mile system plus one additional mile. The proposed financial plan, based on the 101-mile system, covers the balance of construction, operating costs, and debt service on Metro revenue bonds. At year end, extensive activity was underway to win necessary agreements on the plan.

PB-293 335/6GA PC **A05**/MF **A01**
Ebon Research Systems, Silver Spring, MD.
Liners for Sanitary Landfills and Chemical and Hazardous Waste Disposal Sites.
Survey review rept. Sep 77,
Sylvia A. Ware, and Gilbert S. Jackson. May 78, 94p* EPA/600/9-78/005
Contract EPA-68-03-2460-4

Descriptors: *Solid waste disposal, *Earth fills, *Linings, *Directories, *Hazardous materials, Chemical compounds, Sites, Cost analysis, Comparison, Polymeric films, Soils.
Identifiers: Land disposal.

This report lists addresses of sanitary landfills and chemical and hazardous waste disposal sites and

holding ponds with some form of impermeable lining. Liners included are polyethylene, polyvinyl chloride, Hypalon R, ethylene propylene diene monomer, butyl rubber, conventional paving asphalt, hot sprayed asphalt, asphalt-sealed fabrics, and concrete. Sites lined with treated soils including compacted clay, are also included in the list. Most of the sanitary landfills identified with impermeable liners are of recent construction, a few are 5 years old or more. A brief examination is also made of three possible methods for excavating a solid waste landfill to remove a small piece of liner for laboratory study. These methods are the use of the dragline, the backhoe, or the caisson. The methods are briefly described and compared as to suitability, and a preliminary cost comparison is given.

PB-293 336/4GA PC **A23**/MF **A01**
Acurex Corp., Mountain View, CA. Aerotherm Div.
Proceedings: Workshop on Catalytic Combustion (3rd), Held at Asheville, North Carolina on October 3-4, 1978.
Rept. for May-Nov 78,
John P. Kesselring. Feb 79, 541p* EPA/600/7-79/038
Contract EPA-68-02-2611

Descriptors: *Air pollution control, *Industrial wastes, *Meetings, Catalysts, Combustion products, Exhaust emissions, Fuels, Afterburners, Surfaces, Furnaces, Nitrogen oxides, High temperature tests, Performance evaluation, Design criteria, Boundary layer.
Identifiers: *Catalytic reactors(Exhaust systems), State of the art, Stationary sources, Air-fuel ratio, Heterogeneous reactors, Low btu gas.

The proceedings document the major presentations at the Third Workshop on Catalytic Combustion, in Asheville, North Carolina, October 3-4, 1978. Sponsored by the Combustion Research Branch of EPA's Industrial Environmental Research Laboratory--Research Triangle Park, the workshop served as a forum for the presentation of results of recent research in the areas of catalyst and catalytic combustion system development. The workshop provided industrial, university, and government representatives with the current state-of-the-art in the application of catalyst systems for pollution control and performance improvement. Applications include firetube and watertube boilers and gas turbines for utility, industrial, automotive, and aircraft systems.

PB-293 346/3GA PC **A07**/MF **A01**
California Governor's Drought Emergency Task Force, Sacramento.
Alternative Drought Strategies for 1978(California).
Jan 78, 138p

Descriptors: *Droughts, *Water supply, *California, Demand(Economics), Water quality, Water rights, Irrigation, Agriculture, Urban areas, Forest fires, Recreation, Recommendations, Water conservation, Surveys, Allocations.
Identifiers: *Water shortage.

The report describes the effects of the drought in California for the 1977, 1978 period. It also discusses and presents recommendations for water supply and needs for urban areas, irrigation, energy, forest and fire, and recreation.

PB-293 355/4GA PC **A06**/MF **A01**
Morrell (John) and Co., Chicago, IL.
Oxidation Ditch Treatment of Meatpacking Wastes.
Technical rept. 1966-72,
Wayne L. Paulson, and Lawrence D. Lively. Jan 79, 123p EPA/600/2-79/030

Descriptors: *Activated sludge process, *Industrial waste treatment, Meat, Design, Efficiency, Aeration, Oxidation, Lagoons(Ponds), Settling basins, Ammonia, Greases, Sludge disposal, Performance evaluation, Iowa.
Identifiers: *Meat packing industry.

The analysis of 18 months of early operation for a channel aeration activated sludge wastewater treatment plant is presented. The treatment plant receives an average flow of 2.8 million gallons per day from the John Morrell and Company, Ottumwa, Iowa hog and beef meatpacking plant. The treatment plant includes preaeration, primary settling and grease removal followed by two 3.5 million gallon aeration channels (40 by 6 feet deep by 1,050 feet in length) in parallel. Rotor and floating aerators are utilized. One channel utilizes an experimental straightline settling unit (16 by 475 by 6 feet deep). The design and operation of the primary treatment units was inadequate. Tubular conveyors for sludge removal were not satisfactory. More efficient grease and suspended solids removal is needed prior to the aeration process. The channel aeration activated sludge process is capable of achieving organic removals of 90 to 95 percent from meatpacking wastewater. High effluent ammonia levels are of concern. Various plant design changes are needed to improve the consistency of good effluent quality.

PB-293 376/0GA PC **A10**/MF **A01**
Midwest Research Inst., Kansas City, MO.
Chemical Technology and Economics in Environmental Perspective. Task I. Analysis of the Sources of Phosphorus in the Environment.
Final rept.,
Charles E. Mumma, Fred C. Hopkins, Kathryn Bohannon, and Thomas W. Lapp. Mar 79, 224p* EPA/560/2-79/002
Contract EPA-68-01-3896

Descriptors: *Environmental surveys, *Phosphorus, Sources, Inorganic phosphates, Water pollution, Air pollution, Nutrients, Transport properties, Methodology, Data acquisition, Data analysis, Soils, Trends, Assessments, Detergents, Process charting, Design criteria, Industrial wastes, Combustion products.
Identifiers: Nonpoint sources, Point sources, Solid wastes, *Path of pollutants, Eutrophication.

A qualitative and quantitative assessment of the principal sources of phosphorus release to the environment was performed. Natural sources were not extensively evaluated nor were they quantified. Nonpoint sources were identified by land use; discharge data for specific land uses were obtained from the literature. Point sources were estimated on the basis of model flow diagrams and phosphorus material balances; no measured levels were utilized. The total national phosphorus emissions to air and water in 1978 were about 2.9 million metric tons. Of this amount, approximately 87.6% was attributable to nonpoint sources and 12.4% to point sources. Major nonpoint contributors are cropland runoff and pasture and rangeland runoff; for the major point sources, municipal sewage treatment was the largest single contributor. From the data developed for the national emissions, a regional assessment was performed for Florida to evaluate the difference in phosphorus sources in regions and for the nation. A cursory analysis was also performed of detergent phosphate controls in Indiana and New York. The analysis addressed surface water geography, location and nature of phosphorus water quality problems, and the impact of detergent phosphate control.

PB-293 387/7GA PC **A07**/MF **A01**
New England River Basins Commission, Hanover, NH. Connecticut River Basin Office.
Plan of Study: Case Studies of the Application of Cost Sharing Policy Options for Flood Plain Management in the Connecticut River Basin.
8 Sep 77, 130p W79-05232

Descriptors: *Flood control, *Flood plains, *Connecticut River Basin, Financing, Relocation, Land acquisition, Management, Policies, Regulations, Evaluation.
Identifiers: *Cost sharing, Nonstructural alternatives, Water Resources Development Act of 1974, Institutional framework.

This document describes a Plan of Study for the conduct of special flood plain management and institutional studies to be carried out by the New England River Basins Commission, pursuant to Section 73(b) of the Water Resources Development Act of 1974, P.L. 93-251. This act authorizes federal cost sharing of 80 percent or more for nonstructural flood plain management measures such as relocation, flood proofing, flood plain regulation and open land acquisition. Its implementation has been held up to permit the Water Resources Council and its member agencies to examine its financial and institutional implications and, on the basis of this examination, to propose policies, procedures, terms and conditions under which federal funding will be authorized under the act. The 'Section 73' study will consider and make recommendations to the Council and basin states on how to secure implementation of federal cost sharing for non-structural flood plain management studies under Section 73.

PB-293 391/9GA PC **A06**/MF **A01**
Lehigh Univ., Bethlehem, PA. Fritz Engineering Lab.
Optimal Dimensions of Pennsylvania Highway Drainage Inlet Gratings.
Final rept.,
Arthur W. Brune, Andrew D. Spear, and Kenneth C. Loush. Apr 78, 103p FEL-401.2, PDT-74-2-FR, FHWA/PA-78/2

Descriptors: *Highways, *Drainage, *Intake systems, Highway planning, Underground drains, Surface drainage, Structural design, Slopes, Pennsylvania.
Identifiers: *Culvert grates, *Highway drainage.

The results of testing an experimental model are presented about the optimal dimensions of gratings on drainage inlets that are installed in triangular channels, both grassed and paved, along highways. Each channel was on a grade of either 0.5%, 2%, or 4%. Each grating was a half-scale model of the prototype. The capacity of each grating was obtained by actual measurement. The width of each grating, 36 in. for the prototype in a paved channel and 48 in. in a grassed channel, was held constant throughout the tests whereas the length of grating ranged from 18 in. to 48 in. The tests showed that, with an increase in length of the inlet, the capacity increased; the increase depends also upon the grade of the channel, the swale slope, and the back slope. In a grassed channel equal side slopes carry more water than unequal side slopes; both at slopes of 6:1 are superior to both at 12:1; and a flat grade enables more water to enter a grating than a steep grade. A good modulus of the capacity of an inlet is that flow rate of which 98% enters into the inlet and 2% bypasses the inlet.

PB-293 425/5GA PC **A05**/MF **A01**
Lake Champlain Basin Study, Burlington, VT.
Historical Land Use Changes and Impacts in Lake Champlain Wetlands (1941/42, 1962, 1974).
Final rept.,
Eileen Barber, Donald J. Bogucki, Gerhard K. Gruendling, and Marguerite Madden. Jun 77, 86p LCBS-06
Prepared by State Univ. of New York Coll. at Plattsburgh. Report on Lake Champlain Basin Study.

Descriptors: *Swamps, *Environmental impacts, *Land use, *Lake Champlain Basin, , Farms, Urban areas, Boundaries, Construction, Forest land, Maps, Flooding, Aerial photographs, Photointerpretation, Roads, Buildins, New York, Vermont, Land Development, History, Trends.
Identifiers: Wetlands, Baseline studies.

The purpose of this report is to provide baseline data on historical land use changes and impacts to 12 priority Lake Champlain wetlands covering 52,000 acres. The specific wetlands studied were: Kings Bay, Monty Bay, Scomotion Creek. Ausable Marsh, Champlain Narrows, Missisquoi River, Stevens Brook, Sandbar Refuge, South Hero Creek, Malletts Creek, Otter Creek, and East Creek. Historical trends of land use change and impacts were analyzed from the early 1940's through 1974 for land both in and adjacent to each of these areas. Black and white aerial photographs were used to note historic land use changes.

PB-293 427/1GA PC **A04**/MF **A01**
Lake Champlain Basin Study, Burlington, VT.
A Lake Champlain Trophic Classification System.
Final rept.,
John Van Benschoten. Jun 78, 58p LCBS-10
Prepared by Vermont State Agency of Environmental Conservation, Montpelier. Report on Lake Champlain Basin Study.

Descriptors: *Water quality, *Lake Champlain, Classifications, Phosphorus, Chlorophylls, Transparence, Biomass, Algae, Indexes(Ratios), New York, Vermont.
Identifiers: *Trophic level, Eutrophication.

The purpose of this study is to establish a uniform trophic classification system for Lake Champlain. A system which provides greater divisions than oligotrophic, mesotrophic, and eutrophic is necessary because of the diversity in lake regions. This system provides tools for measuring the degree of Lake eutrophication and aids in the Lake management process. The proposed Champlain Trophic State Index (TSIc) is a modification of the Carlson Trophic State Index (TSI). Spring total phosphorus (P), mean secchi disc transparency (SD), and mean chlorophyll-a values are the variables used. The TSIc is based on a ranking from 0-100, and is sensitive to changes in trophic status.

PB-293 431/3GA PC **A04/MF A01**
Lake Champlain Basin Study, Burlington, VT.
Lands in Transition: Lake Champlain Shoreland Changes, 1960-1990.
Final rept.,
Elizabeth Humstone. May 78, 74p LCBS-14
Prepared by Vermont State Planning Office, Burlington. Report on Lake Champlain Basin Study.

Descriptors: *Land use, *Regional planning, *Lake Champlain Basin, Shores, Population growth, Socioeconomic status, Municipalities, Residential buildings, Transportation, Public utilities, Predictions, Industries, Rural areas, Farms, Forest land, Economic development, Vermont, New York.

The objective of this report is to provide a summary of the developmental changes in New York and Vermont shoreland communities. Socioeconomic relationships, land use trends, and population characteristics are examined. Land use in the New York and Vermont Lake Champlain shoreland municipalities has many similarities. Both areas are characterized by large tracts of agricultural land, expanding urban centers, and substantial shoreland development. Nearly 30% of the shoreline in New York and Vermont is developed, making it a major land use factor in the shoreland municipalities.

PB-293 433/9GA PC **A04/MF A01**
Lake Champlain Basin Study, Burlington, VT.
Site Selection Guidelines for Disposing of Oil-Saturated Debris.
Final rept.,
Alex Logan, R. Montgomery Fischer, and John Malter. Aug 78, 54p LCBS-16
Prepared in cooperation with Rutland Regional Planning Commission, VT., and Vermont State Agency of Environmental Conservation, Montpelier. Report on Lake Champlain Basin Study.

Descriptors: *Crude oil, *Waste disposal, *Lake Champlain Basin, Refuse, Earth fills, Site surveys, Planning, Removal, Instructions, Maps, Access roads, Vermont, New York.
Identifiers: *Oil spills, Land application.

In the event an oil spill occurs on a body of water, debris is coated with oil. New York and Vermont, like most states, have plans for the removal of oil and debris from state lakes, rivers and streams. This report provides an analysis of alternatives for disposing oil-soaked debris. Those methods found to be most appropriate for the Lake Champlain Basin are landspreading, landfilling and burial. They are discussed at length in the report. Forty-six, Lake Champlain Basin sites, meeting the necessary criteria for oil-soaked debris disposal, were identified. A map and description of the areas are included in the work.

PB-293 434/7GA PC **A04/MF A01**
Lake Champlain Basin Study, Burlington, VT.
Lake Champlain Basin Forestland as a Source of Nonpoint Pollutants.
Final rept.
Sep 78, 52p LCBS-17
Prepared by Forest Service, Washington, DC. Report on Lake Champlain Basin Study.

Descriptors: *Forest land, *Water pollution, *Lake Champlain Basin, Runoff, Soil erosion, Harvesting, Sediments, Temperature, Lumbering, Roads, Soil properties, Topography, Slopes, Measurement, Estimating, Tables(Data), New York, Vermont.
Identifiers: *Nonpoint sources, Clear cutting.

This report provides a basic discussion of timber harvesting and forest land use in the Lake Champlain Basin. Of principal concern is the impact such activities have on the water quality of basin streams, rivers and the Lake. The major cause of impaired water quality associated with forestland is sediment from roads and trails. Erosion losses depend on a host of interacting factors, including soil type, topography, weather, time of year, logging equipment and frequency of road use. Measures of erosion rates are given in the report.

PB-293 435/4GA PC **A04/MF A01**
Lake Champlain Basin Study, Burlington, VT.
Estimates of the Annual Loading of Total Phosphorus to Lake Champlain.
Final rept.,
Kenneth G. Bodgan. Sep 78, 61p LCBS-18
Prepared by New York State Dept. of Environmental Conservation, Albany. Report on Lake Champlain Basin Study.

Descriptors: *Phosphorus, *Water pollution, *Lake Champlain, Sampling, Estimating, Periodic variations, Sewage treatment, Land use, Agriculture, Forestry, Residential buildings, Runoff, Tables(Data), Construction, Industries, Vermont, New York.
Identifiers: *Nonpoint sources, *Point sources, Organic loading.

This report presents the best abailable information about point, non-point and tributary loading of phosphours to Lake Champlain. Estimates of the total contribution each source gives to the annual phosphorus loadings are generated. The highly detailed report provides New York, Vermont, and Quebec water resource managers with information about the ability of their waste treatment facilities to remove phosphorus and suggest the need to upgrade existing systems. It notes that nearly half of all phosphorus reaching the Lake comes from point sources, while the other half is generated by natural nutrient loss, poor agricultural and forestry practices, construction activity and urban runoff.

PB-293 436/2GA PC **A05/MF A01**
Lake Champlain Basin Study, Burlington, VT.
Erosion and Sedimentation Nonpoint Pollution Sources and Controls, LaPlatte River Watershed.
Final rept.
Sep 78, 80p LCBS-19
Prepared by Soil Conservation Service, Burlington, VT. Report on Lake Champlain Basin Study.

Descriptors: *Soil erosion, *Water pollution, *Laplatte River Watershed, *Lake Champlain, Rural areas, Farms, Land use, Sedimentation, Embankments, Soil conservation, Roads, Cultivation, Runoff, Fertilizers, Construction, Grassland, Forest land, Sampling, Recommendations, Vermont.
Identifiers: *Nonpoint sources, Chittenden County(Vermont).

Rural nonpoint sources of nutrients and sediments are recognized as major contributors to pollution and accelerated eutrophication in Lake Champlain. Surface run-off from developed and agricultural land, polluted ground water flow and soil erosion all contribute to water quality problems in the lake. The purpose of this study is to compute erosion from various land uses, streambanks, roadbanks and construction sites. To estimate sediment delivery from these sources, a case study of a watershed (the LaPlatte River) and its receiving bay (Shelburne Bay) was conducted. This report not only examines future watershed conditions should these practices continue, but also makes recommendations for improved practices and future studies.

PB-293 438/8GA PC **A07/MF A01**
Lake Champlain Basin Study, Burlington, VT.
Corbeau Creek, Great Chazy, and Little Chazy Watersheds.
Special studies rept. (Final).
Oct 78, 143p LCBS-22
Prepared by Soil Conservation Service, Syracuse, NY. Report on Lake Champlain Basin Study.

Descriptors: *Water pollution, *Corbeau Creek, *Chazy Watersheds, *Lake Champlain, Agriculture, Runoff, Fertilizers, Socioeconomic status, Farms, Agricultural wastes, Livestock, Forestry, Pesticides, Soil erosion, Drainage, Concentration(Composition), Oxygen, Dissolved gases, Nitrogen, Phosphorus, New York.
Identifiers: Clinton County(New York), *Nonpoint sources, Silviculture, Baseline studies, Water quality data.

This special report is an examination of the contribution the Corbeau Creek, Great Chazy and Little Chazy Watersheds in Clinton County, New York make to Lake Champlain water quality. This effort relates to the typical resource management concerns such as eutrophication, rural, non-point sources of pollution, and toxic substances raised in the Lake Champlain Basin (Level B) Study. The report describes the watershed, including physical, social and economic characteristics of the area. Agricultural practices and activities such as farm operations, crop management and fertilizing practices are covered. The effects silviculture has on water quality are examined. In addition to the baseline data given, an analysis of water quality related problems and needs was conducted as part of this report.

PB-293 441/2GA PC **A03/MF A01**
Lake Champlain Basin Study, Burlington, VT.
Lake Champlain Islands Report.
Final rept.,
Fred Dunnington. Nov 78, 50p LCBS-25
Prepared by Franklin-Grand Isle Regional Planning and Development Commission, St. Albans, VT. Report on Lake Champlain Basin Study.

Descriptors: *Natural resources, *Lake Champlain Islands, Inventories, Wildlife, Recreation, Conservation, Birds, New York, Vermont.

The smaller islands of Lake Champlain (those 1,000 acres or less in size) are special places and require special attention. Some islands provide habitat for species of birds not found anywhere else in the area. Others serve as destination for recreationists. Twenty-two percent of the 71 islands are publically owned. Forty-nine percent are in private ownership. The remaining islands have unknown status. This report provides a comprehensive inventory of these island resources. Chapters devoted to wildlife, recreation, and protection methods highlight the study. A summary of the Lake Champlain Islands is given. In addition a general location map of the islands is enclosed.

PB-293 442/0GA PC **A05/MF A01**
Lake Champlain Basin Study, Burlington, VT.
Suitability of Input-Output Models for Evaluating the Impact of Phosphorus Loadings to Lake Champlain.
Final rept.,
John Van Bendchoten. Jan 79, 90p LCBS-26
Prepared by Vermont State Agency of Environmental Conservation, Montpelier. Report on Lake Champlain Basin Study.

Descriptors: *Phosphorus, *Water pollution, *Lake Champlain, Mathematial moels, Assessments, Runoff, Precipitation(Meteorology), Stream flow, Inorganic phosphates, New York, Vermont.
Identifiers: Eutrophication, Organic loading, Trophic level, *Model studies.

As a result of recent studies it has become apparent that the excessive addition of nutrients to Lake Champlain, largely as a result of cultural influences, is resulting in a deterioration in Lake water quality. The objective of this report is to document past modeling analysis and assess the suitability of the input-output model for evaluating the impact of phosphorus loadings to Lake Champlain. In addition, several of the input-output models are applied to project trends in trophic status for Lake Champlain under two alternative management alternatives.

PB-293 445/3GA PC **A04/MF A01**
Lake Champlain Basin Study, Burlington, VT.

The Institutional Potentials for Implementing the Lake Champlain Level B. Study Recommendations.
Final rept.,
Carl Carlozzi, and Linda Prosnitz. Jan 79, 71p
LCBS-29
Report on Lake Champlain Basin Study.

Descriptors: *Water resources, *Land use, *Lake Champlain, *Regional planning, State government, National government, Management, Local government, New York, Vermont, United States, Canada.
Identifiers: Institutional framework, Water compacts.

The management of Lake Champlain, the sixth largest lake in the United States, is governed by numerous levels of government. The Basin is divided between New York and Vermont, between the United States and Canada, and is split into parts of over 17 counties and 150 towns and cities. History shows that bi-state management of Lake Champlain water and related resources has occurred only in response to specific crises or issues. A continuous, cooperative approach toward the Lake has been the exception, rather than the rule. Under the direction of the Lake Champlain Basin (Level B) Study, the two states are examining ways to increase the bi-state cooperation. When Lake Champlain was given status equal to the great lakes under the Anadromous Fish Conservation Act, New York and Vermont officially began to explore the possibility of including Lake Champlain in the Coastal Zone Management program. This and other bi-state cooperative approaches are discussed in this report.

PB-293 457/8GA PC **A12**/MF **A01**
General Electric Co., Santa Barbara, CA. Center for Advanced Studies.
Groundwater Quality Monitoring of Western Coal Strip Mining: Identification and Priority Ranking of Potential Pollution Sources,
Lorne G. Everett. Jan 79, 265p GE77TMP-50, EPA/600/7-79/024
Contract EPA-68-03-2449

Descriptors: *Ground water, *Coal mines, *Water pollution, Monitoring, Strip mining, Mine waters, Waste disposal, Ranking, Sources, Refuse, Spoil, Oil wells, Explosives, Hydrogeology, Aquifers, Water wells, Concentration(Composition), Inorganic sulfates, Trace elements, Inorganic nitrates, Metals, Inventories, Tables(Data), Wyoming.
Identifiers: Campbell County(Wyoming).

This report is the first in a series of several to come out of a 5-year study to assess the impact on groundwater quality of coal strip mining in the Western United States. Presented is a preliminary priority ranking of potential sources of groundwater pollution in an area within Campbell County, Wyoming, overlying one of the major coal fields in the Powder River Basin. The priority ranking was developed by making a thorough review of the existing data available from monitoring activities of mining companies and various county, State, and Federal agencies. Potential pollution sources and methods of waste disposal at seven operating mines and also in the vicinity of the City of Gillette were inventoried. The data were carefully reviewed to identify the potential pollutants associated with each source. Groundwater usage was inventoried. An appraisal of the hydrogeologic framework and existing groundwater quality was developed. By superimposing the identified potential groundwater pollution sources on the hydrogeologic framework and making estimates of pollutant mobilities from these sources, the preliminary priority ranking was developed.

PB-293 464/4GA PC**$10.60**/MF **A01**
Jorgensen (Roy) and Associates, Gaithersburg, MD.
Cost and Safety Effectiveness of Highway Design Elements.
Final rept.
Dec 78, 246p* ISBN-0-309-02858-2, TRB/NCHRP/REP-197
Report on National Cooperative Highway Research Program. Sponsored in part by Federal Highway Administration, Washington, DC., and American Association of State Highway and Transportation Officials, Washington, DC. Library of Congress catalog card no. 78-65954. Also pub. as ISSN-0077-5614.

Descriptors: *Divided highways, *Cost effectiveness, *Safety, Pavements, Design, Rural areas, Width, Surface properties.
Identifiers: Road shoulders.

A cost-safety effectiveness methodology is presented that permits selection of optimal safety designs for pavement width, shoulder width, and shoulder surface type on rural two-lane highways. A user's manual presents step-by-step procedures, together with examples, for application of the methodology by highway designers. Synopses of significant findings are provided. Existing geometric and accident files from three states were used to quantify the safety effect of pavement width, shoulder width, and shoulder surface type for rural two-lane highways. These safety relationships are expressed as accident rate adjustment factors for a base accident rate associated with a maximum design. The adjustment factors are applicable to any highway agency, provided base accident rates, fractional property-damage-only accidents, and the injury-to-fatality ratio are developed by the agency. A methodology is presented that will provide safety benefits in excess of those that would be obtained without its use.

PB-293 467/7GA PC **A15**/MF **A01**
Eureka Labs., Inc., Sacramento, CA.
Air Pollution Emissions Associated with Pesticide Applications in Fresno County.
Final rept. Sep 77-Jun 78,
Steve Leung, Roger Johnson, Timothy Ling, Chung S. Liu, and Richard Peter. Dec 78, 330p
ELI-77-E-02, ARB-R-A7-047-30-78-92
Contract ARB-A7-047-30

Descriptors: *Air pollution, *Pesticides, Substitutes, Transport properties, Regulations, Inventories, Photochemistry, Sources, California.
Identifiers: Environmental chemical substitutes, *Fresno County(California), *Air quality, Path of pollutants, Heavy metals.

This report presents the findings in estimating the air pollution emissions associated with 1976 pesticide applications in Fresno County, California. To achieve the program objectives, this project was conducted in three parts. The primary concern of the first part was data collection which involved both reported and unreported pesticide use data. The second part involved an inventory of emissions resulting from pesticide applications in Fresno County. Possible alternatives to pesticide use and methods of pesticide applications are discussed in the last of the report. The estimated 1976 pesticide application in Fresno County was 22 million pounds. This quantity represents 25.2% synthetic organics, 29.8% inorganics, and 45% of nonsynthetic petroleum oils. The major pesticide end user is the agricultural industry which is responsible for 89.1% of the total consumption. Home and garden application represents a 3.8% consumption. This rate of pesticide application leads to an estimated total organic gas (TOG) annual average emission of 19.3 tons per day (TPD), and 18.6 TPD for reactive organic gas (ROG) emissions.

PB-293 471/9GA PC **A08**/MF **A01**
Hawaii State Dept. of Transportation, Honolulu.
National Transportation Study (1974). Narrative Report.
E. Alvey Wright. 24 Jul 74, 163p

Descriptors: *Transportation, *Hawaii, Policies, Objectives, Highways, Airports, Harbors, Ports, Urban transportation, Financing, Planning.
Identifiers: Tourism.

The General Plan of the state of Hawaii provides the basis for an integrated and coordinated land development policy, geared directly to anticipated population and economic growth. Included are state projects essential to the level of expected and desired economic activities. It is a statement of policy concerning objectives and the means of accomplishing the same objectives. The policy is presented in plans and programs for the use of land and for the development of facilities which will be required to produce the most desired living, working, and traveling conditions for the people of Hawaii.

PB-293 484/2GA PC **A04**/MF **A01**
Water Resources Research Institutes, Gainesville, FL. South Atlantic-Gulf Region Council of Directors.
Analysis of Researchable Water Problems in the South Atlantic-Gulf Region.
Technical completion rept.
Jan 79, 64p W79-05401, OWRT-X-133(9076)(1)
Contract DI-14-31-0001-9076
Sponsored in part by Florida Univ., Gainesville. Water Resources Research Center.

Descriptors: *Water supply, *Water quality, Evaluation, Ground water, Runoff, Conflicts, Water conservation, Water pollution, Water treatment, Sewage disposal, Dredging, Water rights, Classifications, United States.
Identifiers: Southeast Region(United States), Priorities, Listings.

The South Atlantic-Gulf Region is generally abundantly supplied with water--both surface and underground. However, man's activities have created problems of both water quantity and water quality. The effects of improper water planning and management have been devastating in some instances. Systematic analysis of the water resources problems of the region by the directors of the water resources research institutes of the respective states produced the lists of major regional problems and critical research needs.

PB-293 495/8GA PC **A04**/MF **A01**
Drake Sheahan/Stewart Dougall, Inc., New York.
Private Carriage Motivation and Impact of Rural Location.
Final rept.,
Robert M. Sutton, Ronald S. Potter, and Donald W. Weitz. 28 Mar 75, 64p 2273, DOT/P/50-78/1
Contract DOT-OST-PS-50367

Descriptors: *Cargo transportation, *Highway transportation, *Industries, Trucks, Services, Motivation, Consolidation, Rural areas.
Identifiers: *Rural transportation.

The study deals with 26 selected firms who developed private motor carriage operations for one or more of the following reasons: (1) to improve service, even though the result was more costly (15 examples), (2) to reduce transportation cost, even though the resulting service was lower (10 examples), and (3) to serve a plant in an unfavorable rural location (21 examples). The report contains a brief case description of each firm and its reason(s) for going into private carriage. The firms were very diverse in terms of size, industry classification (particularly represented were industrial products, forest products, and food companies), and specific motivations. Under the first type of motivation, seven specific service improvements were noted (varying from firm to firm): (1) faster transit for normal orders, (2) better control and faster transit for expedited orders, (3) need for specialized equipment, and better, (4) scheduled deliveries, (5) overall consistency of service, (6) handling and claims experience, and (7) direct off-highway deliveries. In nearly every case where reducing cost was the motivation, reduction in service entailed an increased cycle time for orders or deliveries, by virtue of delays in consolidating shipments for transport by private truck. Unfavorable rural plant locations were widespread across the country, and all lacked sufficiently reliable common carrier truck service.

PB-293 502/1GA PC **A03**/MF **A01**
Gilbert Associates, Inc., Reading, PA.
Typical Costs for Electric Energy Generation and Environmental Controls.
Final report. Apr-Nov 78,
M. G. Klett. Jan 79, 30p EPA/600/7-79/026
Contract EPA-68-02-2605

Descriptors: *Cost analyses, *Air pollution control, *Thermal pollution, Capitalized costs, Sulfur, Particles, Nitrogen oxides, Technology, Water pollution control, Operating costs, Cooling towers, Fossil fuels, Electric power plants, Combustion products, Industrial wastes.

Identifiers: *Fossil-fuel power plants, Nuclear power plants.

The report gives typical costs for electric power generating plants and their environmental controls for installations of 1000 and 5000 MWe capacity, including the expected range of uncertainty. Total annualized costs for a particular configuration can be computed by adding the appropriate incremental costs for fuel and environmental control equipment to the cost of the base generation system. Fixed charges are computed on the basis of 18% of the capital investment; cost data are corrected to mid-1975. Two examples of the use of the data are included. The data and method are intended to provide an overview. Actual installation costs may differ widely from those found from information in this report because of site-specific considerations.

PB-293 513/8GA PC **A10**/MF **A01**
Tennessee Univ., Knoxville. Water Resources Research Center.
Evaluation of the Effects of Urbanization on Stormwater Runoff and Quality.
Research rept.,
Donald E. Overton, Roger A. Minear, William L. Troxler, Richard S. Brown, and Ernest C. Crosby.
30 Sep 78, 206p 65, W79-05400, OWRT-A-046-TENN(3)
Contract DI-14-34-0001-8045
Prepared in cooperation with Tennessee Univ., Knoxville. Dept. of Civil Engineering.

Descriptors: *Runoff, *Urban areas, *Water pollution, *Watersheds, Mathematical models, Regression analysis, Suspended sediments, Dust, Concentration(Composition), Mercury(Metal), Chlorine, Lead(Metal), Arsenic, Silicon oxides, Inorganic phosphates, Tables(Data), Tennessee.
Identifiers: *Storm water runoff, Chemical oxygen demand, *Unit hydrographs, Knoxville(Tennessee), Heavy metals, *Nonpoint sources.

Results of an analysis of stormwater runoff and quality from four small urban watersheds in Knoxville, Tennessee, are presented in two parts: Part 1 is on Stormwater Hydrographs and Part 2 is on Stormwater Quality. A third part presents the mathematical models developed in the course of the study for simulating storm hydrographs, suspended sediment pollutographs and loads, and sediment delivery ratios. There is apparently a wide range of effects of dustfall and urban stormwater quality on a contaminant-by-contaminant basis. Certain constituents such as COD, Hg, Cl, Pb, SiO2, PO4, and As, significantly influence stormwater quality. Likewise COD, Hg, Cl, As, and PO4 levels found in the stormwater were caused primarily by dustfall. There are two distinct but overlapping groups of contaminants found in the urban watershed. One group is the minerals and solids which have relatively constant concentrations from storm to storm and the other group is heavy metals, nutrients, and COD which have decreasing concentration with increasing runoff.

PB-293 526/0GA PC **A08**/MF **A01**
Curran Associates, Inc., Northampton, MA.
Metropolitan District Commission Water Usage Study.
Jun 75, 172p
Prepared in cooperation with Massachusetts Univ., Amherst. Water Resources Research Center.

Descriptors: *Water consumption, *Water conservation, *Massachusetts, Statistical analysis, Industries, Meters, Municipalities, Trends, Residential buildings, Populations, Tables(Data).
Identifiers: Domestic water, *Water utilization.

The study area consists of the 33-member communities in the Massachusetts Metropolitan Water District and the 10 nonmember communities which are supplied wholly, in part, or on an as-needed basis by water from the MDC system. Information is given on the quantities of water used for specific purposes, and on quantities that reflect unmetered water in each of the MDC-supplied communities. The purpose of this water usage study has been to obtain and present such information to MDC as a first step in its effort to evolve a desirable water conservation program.

PB-293 562/5GA PC **A04**/MF **A01**
Weidlinger Associates, New York.
Seismic Performance of Underground Water Pipelines in the Southeast San Fernando Valley in the 1971 San Fernando Earthquake,
Jeremy Isenberg. Sep 78, 67p R-7848, NSF/RA-780464
Grant NSF-PFR78-15049

Descriptors: *Water pipelines, Earthquakes, Subsurface structures, Seismic waves, Earth movements, Dynamic structural analysis, Damage assessment, Leakage, California.
Identifiers: *Earthquake engineering, San Fernando Valley, Ground motion.

This study examines the seismic performance of underground water pipelines in the southeast San Fernando Valley in the 1971 San Fernando earthquake. Studies were reported on the effects of corrosion on leaks in pipelines, made of steel and cast iron, that were damaged in regions where ground shaking was dominated by wave propagation. The present investigation extends previous work by considering a larger region of the southeastern San Fernando Valley where wave effects dominate ground shaking. It is part of the East Valley District of the Los Angeles Department of Water and Power and covers about 30 square miles which includes 71 main leak locations. The findings show that corrosion is a major factor in determining where leaks occur in areas undergoing ground shaking as well as under normal conditions. There are strong indications that the effects of ground shaking on pipelines continued in San Fernando Valley for several years after the earthquake. Included is a section on local geography.

PB-293 604/5GA PC **A04**/MF **A01**
Kansas Water Resources Research Inst., Manhattan.
Kansas River Limnology: Seasonal Variations in Photosynthetic Production and Heavy Metal Accumulation by Aquatic Insects.
Project completion rept. 1 Jul 76-31 Mar 78,
G. Richard Marzolf. Jan 79, 62p CONTRIB-207, W79-05234, OWRT-A-078-KAN(1)
Contract DI-14-34-0001-7035
Prepared in cooperation with Kansas Univ., Lawrence.

Descriptors: *Aquatic animals, *Primary biological productivity, *Insects, *Water quality, *Kansas River, Monitoring, Photosynthesis, Oxygen, Dissolved gases, Respiration, Algae, Turbidity, X ray fluorescence, Metals, Stream flow, Reservoirs, Aeration, Kansas.
Identifiers: Heavy metals, Eutrophication.

Contents:
- The control of photosynthesis in the Kansas River by hydraulic events and turbidity, A geometric model and some field observations;
- The effect of increased reservoir outflow on algal biomass and photosynthetic oxygen production in the Kansas River;
- Seasonal variation in photosynthetic oxygen production and some preliminary measurements of metals in aquatic insects;
- Metal concentrations in aquatic insects.

PB-293 606/0GA PC **A03**/MF **A01**
Massachusetts Univ., Amherst. Water Resources Research Center.
Influence of Waste Residuals in Estuarine Waters on Development, Behavior and Survival of Soft-Shell Clam Larvae.
Completion rept.,
Christopher Gledhill, Charles F. Cole, and Christopher Martin. 1978, 44p PUB-99, W79-05398, OWRT-A-111-MASS(1)
Contract DI-14-34-0001-8023
Prepared in cooperation with Massachusetts Univ., Amherst. Dept. of Forestry and Wildlife Management, and Massachusetts Univ., Gloucester. Marine Station.

Descriptors: *Clams, *Estuaries, *Water pollution, Monitoring, Larvae, Abundance, Survival, Temperature, Salinity, Dissolved gases, Oxygen, Correlation, Field tests, Competition, Massachusetts.
Identifiers: Water pollution effects(Animals), *Mya arenaria, Gemma gemma.

The effects of waste effluents on soft-shell clam (Mya arenaria) larval and spat survival were studied at one polluted and one unpolluted site. Soft-shell clam larval abundance in the plankton was determined at the two sites in 1977 and 1978, together with the temperature, salinity, and dissolved oxygen of the surface water. The two flats were sampled in 1978 to obtain correlations between the infaunal species and soft-shell clams. Field experiments were conducted to determine the effect of one member of the infauna, Gemma gemma, on settlement of soft-shell clams. The study indicates the possibility that waste effluents can adversely affect recruitment of soft-shell clams by changing the biota to species detrimental to soft-shell clams.

PB-293 647/4GA PC **A11**/MF **A01**
Colorado State Univ., Fort Collins. Water Resources Research Inst.
Institutional Arrangements for Effective Water Management in Colorado.
Completion rept.,
Phillip O. Foss. Nov 78, 243p COMPLETION-88, W79-05049, OWRT-A-029-COLO(2)
Contract DI-14-34-001-6006, DI-14-34-001-7011
Sponsored in part by Contracts DI-14-34-001-7012 and DI-14-34-001-8006.

Descriptors: *Colorado, *Water supply, Demand(Economics), Political objectives, Water storage, Ground water, Regulations, Population growth, State government, Legislation, Claims.
Identifiers: *Water management(Applied), Institutions, Intergovernmental relationship.

Rapidly increasing population and industrial growth in Colorado have sharply increased demands for water. In the face of these increasing demands, water supply is relatively fixed. Present occasional or isolated shortages will soon become chronic. The study attempts to develop politically acceptable institutional arrangements for increasing the supply and for more efficient methods of utilizing present supplies. Among the options for increasing supply are: Reevaluation of Colorado's commitments to downstream states; construction of additional storage developments; increased state support for precipitation augmentation; increased state support for watershed management; increased ground water withdrawals; and an expeditious resolution of Federal Reserved Rights and Indian claims. Options for increasing efficiency of present supply by institutional methods include: Discourage population growth; integrate land and water planning; employ the zoning concept to regulate water use; integrate water quantity and water quality management in the same agency; integrate ground and surface water management; encourage conservation methods in irrigation and municipal use; facilitate temporary transfers including a state 'water bank;' integrate management of all water supply units in a single state water board.

PB-293 672/2GA PC **A19**/MF **A01**
Landrum and Brown, Inc., Cincinnati, OH.
National Transportation Study for Alabama (1974).
1974, 429p
Sponsored in part by Alabama Development Office, Montgomery.

Descriptors: *Transportation, *Alabama, Planning, Highway transportation, Urban transportation, Mass transportation, Airports, Air transportation, Transportation management, Expenses, Financing, State government, Government policies.

The 1974 National Transportation Study is a milestone in transportation planning and programming for the State of Alabama. The Study, divided into three major parts or phases -- 1972 Inventory, 1990 Plan, and 1980 Program, incorporates a truly comprehensive view of the State's existing system -- the 1972 Inventory -- and from that data and information, develops a plan to meet the State's long-range transportation needs and requirements -- the 1990 Plan. Application of planning - programming techniques to the data and information contained in the Inventory and Plan produced the 1980 Program, a description of intermediate-term implementation. The Program describes the transportation system and requisite investment for the period, 1972 - 1980. It results from allocation of available financial resources in a manner best suited to meet specific goals, objectives, and per-

formance criteria. The salient features of each phase of the Study are summarized.

PB-293 841/3GA PC **A04**/MF **A01**
Appropriate Technology Development Association, Lucknow (India).
Some Developments of Appropriate Technology for Improving Physical Amenities in Rural Homes.
Case study series no. 2,
M. K. Garg. Feb 78, 69p
Sponsored in part by Agency for International Development, Washington, DC.

Descriptors: *Community development, *Houses, *Rural areas, Improvement, Developing countries, Water supply, Drainage, Sanitation, Toilet facilities, Illuminating, India.
Identifiers: Developing country application, Villages, Appropriate technology, Biogas.

In the state of Uttar Pradesh, work was done by the Planning Research & Action Institute for improving the rural technologies both for income generation and also in the field of community and home living. The booklet is a case study documenting the work done by the Institute in community and home living technologies.

PB-293 869/4GA PC **A05**/MF **A01**
American Water Works Association, New York.
Distribution des Eaux: Le Calcul des Prix (Water Rates Manual).
Technical series rept. no. 2.
1964, 78p
Text in French. Sponsored in part by Agency for International Development, Washington, DC. Community Water Supply Development Program.

Descriptors: *Cost analysis, *Water distribution, *Developing countries, Manuals, Prices, Water services, Expenses, Taxes.
Identifiers: Developing country application, Water costs, *Water rates.

This is the first of a series of four books that offer developing countries a guide to establishing a water distribution service. This book covers how to determine the proper price scale for the distribution of water. The cost price of the service, expenses, cost and expense distribution, and normal subscription rates are covered. Annexes study prior tariffs, rents, insurance, and fire protection.

PB-293 883/5GA PC **A05**/MF **A01**
Virginia Commonwealth Univ., Richmond. School of Social Work.
Diagnosis, Referral and Rehabilitation Within the Fairfax Alcohol Safety Action Project, 1976. Volume II: The Fairfax Short Term Rehabilitation Study.
Analytical study 5/6 (Final),
David N. Saunders, Mikel Wyckoff, and Neil Henry. Jun 77, 97p DOT-HS-803 981
Contract DOT-HS-067-1-087
Sponsored in part by Virginia Highway Safety Div., Richmond. See also Volume 1, PB-293 395.

Descriptors: *Traffic safety, Rehabilitation, Project management, Effectiveness, Questionnaires, Socioeconomic status, Accident prevention, Motor vehicle accidents, Virginia.
Identifiers: *Alcohol safety action projects, Fairfax(Virginia).

The report describes the Fairfax County Short Term Rehabilitation (STR) study, and examines the effectiveness of the rehabilitation activities on a selected group of defendants in the Fairfax ASAP program. The study included nearly 600 persons divided nearly equally between preproblem and problem drinkers. Information was collected on many aspects of the defendant's life situations. While a limited number of positive short term and long term benefits of treatments were uncovered, there was a notable lack of consistent result within or across drinker levels or between the six and twelve month interviews.

PB-294 011/2GA PC **A07**/MF **A01**
Metropolitan Transportation Commission, Berkeley, CA.
Explanatory Modeling of Transbay Travel Choice.
Working paper,
Henry Fan, and Alistair Sherret. Nov 77, 130p
DOT-BIP-WP-34-3-77
Contract DOT-OS-30176
Prepared by Peat, Marwick, Mitchell and Co., San Francisco, CA. Report on BART Impact Program, Public Policy Project. Sponsored in part by Department of Housing and Urban Development, Washington, DC.

Descriptors: *Rapid transit railways, *Travel patterns, Surveys, Travel time, Buses(Vehicles), Automobiles, Mathematical models, Attitudes, Transportation models, California.
Identifiers: Bay Area Rapid Transit, San Francisco(California), Transit riders, Mode choice transportation models, Work travel patterns.

The 71-mile Bay Area Rapid Transit (BART) System, serving San Francisco, Oakland, Berkeley, and their suburbs, is the first regional-scale rapid transit system to open in the United States in over 50 years. The report analyzes the reasons underlying BART-bus and BART-automobile travel choices in the key transbay travel corridor linking San Francisco and Oakland. Travel modes are defined in terms of 14 service attributes including quantifiable attributes such as travel time and cost, and more difficult-to-quantify attributes such as dependability and safety. Disaggregate models which relate mode-choice probability to perceived satisfaction with the alternative modes are estimated using data for the 14 attributes collected by semantic differential scales. Several different models are estimated and compared for BART-bus and BART-auto choices, for work and nonwork trip purposes, for geographic stratifications of the data, and using linear and logit functional forms. The models provide convincing explanations of mode choice behavior and show that travel time and travel time-related attributes such as dependability and flexibility are the dominant determinants of choice.

PB-294 665/5GA PC **A06**/MF **A01**
Auburn Univ., AL. Dept. of Civil Engineering.
Collapse Pressure Prediction for Thermoplastic Water Well Casings.
Master's thesis,
Duane Dale York. Dec 78, 119p W79-06108, OWRT-A-059-ALA(1)

Descriptors: *Water wells, *Linings, *Thermoplastic resins, Cylindrical shells, Buckling, Compressive properties, Earth pressure, Theses.
Identifiers: *Well casings.

This study analytically determined the collapse resistance of thermoplastic water well casings subjected to a linearly varying external pressure. The method used in the analysis was the principle of minimum potential energy, which is based on minimizing the strain energy of the casing, the potential energy of the external loads, and the strain energy of the confining medium surrounding the casing. The collapse pressure prediction equation was developed in terms of casing geometry, external loading conditions, casing material properties, and surrounding soil or grout support. Parametric studies were conducted to evaluate the influence of these parameters on the predicted collapse pressure. Results indicate that the current method used in designing thermoplastic water well casings in some cases underestimates the collapse resistance of the casing.

13C. Construction Equipment Materials, and Supplies

AD-A064 860/0GA PC **A03**/MF **A01**
Army Engineer Waterways Experiment Station, Vicksburg, MS.
Tests of Brick-Veneer Walls and Closures for Resistance to Floodwaters.
Final rept.,
Carl E. Pace. Dec 78, 28p Rept no. WES-MP-C-78-16
See also Rept. no. WES-TR-C-78-3 dated May 78, AD-A055 972.

Descriptors: *Waterproofing, *Construction materials, Walls, Test facilities, Flooding, Buildings, Hydrostatic pressure, Brick, Protective treatments, Army Corps of Engineers, Test methods.
Identifiers: Brick veneer, Floodproofing.

Floodwaters are a problem and expense to the owners of many homes and commercial buildings. It is important to determine expedient, feasible, and effective ways of floodproofing buildings which are subject to potential flooding. This study is limited to the common brick-veneer wall. The limited tests run show that there are answers to the floodproofing problem and that effective procedures can be established which will allow brick-veneer walls to structurally support any reasonable water depth. It is not advisable to develop a system for reducing flow of water through walls and depend on it without first testing it for performance.

AD-A064 924/4GA PC **A99**/MF **A01**
Construction Engineering Research Lab. (Army), Champaign, IL.
Construction Equipment Cost Guide. Volume 1.
Final rept.,
E. Neely. 1 Nov 77, 811p Rept no. CERL-TR-P-52-VOL-1
See also Volume 2, AD-A064 925. Supersedes report dated Oct 75, AD-A017 271.

Descriptors: *Construction Equipment, *Costs, Loaders, Trucks, Tables(Data), Cost estimates, Bulldozers, Army procurement, Operation, Hoists, Army equipment, Rubber, Steel.
Identifiers: *Construction equipment cost guides.

This guide presents a systematic approach for Department of the Army field pricing support personnel (estimators, negotiators, price analysts auditors, etc.) to use in estimating hourly ownership and operating rates for construction equipment. The guide is intended for use in negotiated construction procurements which require an independent government estimate by regulation. (Author)

AD-A064 925/1GA PC **A99**/MF **A01**
Construction Engineering Research Lab. (Army), Champaign, IL.
Construction Equipment Cost Guide. Volume 2.
Final rept.,
E. Neely. 1 Nov 77, 907p Rept no. CERL-TR-P-52-VOL-2
See also Volume 1, AD-A064 924. Supersedes report dated Oct 75, AD-A016 910.

Descriptors: *Construction equipment, *Costs, Loaders, Trucks, Cost analysis, Diesel engines, Bulldozers, Generators, Tables(Data), Cost estimates, Manuals, Army equipment.
Identifiers: *Construction equipment cost guides.

This guide presents a systematic approach for Department of the Army field pricing support personnel (estimators, negotiators, price analysts auditors, etc.) to use in estimating hourly ownership and operating rates for construction equipment. The guide is intended for use in negotiated construction procurements which require an independent government estimate by regulation. (Author)

AD-A065 318/8GA PC **A02**/MF **A01**
Army Engineer Waterways Experiment Station, Vicksburg, MS.
US-USSR Scientific Exchange Program in the Field of Polymer Concrete.
Final rept.,
John M. Scanlon. Jan 79, 12p WES-MP-SL-79-3, CTIAC-35
Presented at the International Congress on Polymers in Concrete (2nd) 25-27 Oct 78, Austin, TX.

Descriptors: *Concrete, *Polymers, Construction materials, USSR, Information exchange, Foreign technology, Technology transfer, International.
Identifiers: *Scientific exchange programs, *Polymer concrete, *Concrete polymer composites.

The US-USSR scientific exchange program in the field of polymer concrete was initiated in 1974; it has been one of the more active exchanges and as a result of this activity, three Soviets presented technical papers at the Second International Congress on Polymers in Concrete, held at the University of Texas, Austin, 25-27 October 1978. This

report generally descibes the US-USSR exchange programs in various areas and in particular the exchange programs pertaining to the Water Resources Working Group. (Author)

AD-A065 446/7GA PC **A03**/MF **A01**
SACLANT ASW Research Centre, La Spezia (Italy).
SACLANTCEN's Shipboard Winches and Launch-and-Recovery Devices.
Special rept.,
Vittorio Manzotti. 15 Mar 76, 45p Rept no. SACLANTCEN-SR-M-86

Descriptors: *Winches, *Ship auxiliary equipment, *Antisubmarine warfare, Hoists, Recovery, Launching, Towing, NATO, Hydrophones, Hydraulic equipment, Italy.

The characteristics of all winches and launch-and-recovery devices, some of which have been designed or modified to meet specific requirements, available at the SACLANT ASW Research Centre (SACLANTCEN) are listed. The work described represents the effort of SACLANTCEN's Engineering Support Group over the past years. (Author)

PB-293 055/0GA PC **A17**/MF **A01**
Massachusetts Inst. of Tech., Cambridge. Constructed Facilities Div.
Feasibility of Horizontal Boring for Site Investigation in Soil.
Final rept.,
Charles H. Dowding. Feb 76, 398p MIT-CE-R76-15, FHWA/RD-76/1
Contract DOT-FH-11-8526
Prepared in cooperation with Titan Contractors Corp., Sacramento, CA., Charles Stark Draper Lab., Inc., Cambridge, MA., and Weston Geophysical Engineers, Westboro, MA.

Descriptors: *Subsurface investigations, *Boring machines, *Directional drilling, Tunnels, Boreholes, Design, Soil properties, Drilling fluids, Cost analysis.
Identifiers: *Horizontal boring.

The objective of this study is to assess horizontal boring and exploration as an alternative to vertical boring in geotechnical investigation prior to the design and construction of tunnels. The study was divided into three separate topics: Excavation, Exploration, and Economics. Under Excavation, new ideas and preliminary designs were developed for continuous, maneuverable penetration out to distances of 5000 ft (1500 m). Detailed methodology is presented for penetration to 2000 to 3000 ft (610 to 915 m) with recently developed equipment and technology. Under Exploration, preliminary designs were developed for down-hole seismic (geophysical) and contact sensing. These approaches were technically evaluated by investigation of wave attenuation characteristics and hole disturbance. Under Economics, horizontal penetration (with on-board sensing and separate follower sensing) was compared for cost effectiveness with vertical boring and surface geophysics. In addition, the cost of unanticipated conditions was summarized from case histories to assess the value of the various exploration approaches.

PB-293 251/5GA PC **A04**/MF **A01**
Louisiana Dept. of Transportation and Development, Baton Rouge. Research and Development Section.
Evaluation of Data Generated by Statistically Oriented End-Result Specifications.
Final rept.,
S. C. Shah. Jan 79, 71p LA-75-3G-F, FHWA/LA-79/125

Descriptors: *Bituminous concretes, *Portland cements, *Quality assurance, Data acquisition, Field tests, Pavements, Cost analysis, Frequency distribution, Specifications, Louisiana.

This report is concerned with the review of data generated on projects let under the statistically oriented end-result specifications (ERS) on asphaltic concrete and portland cement concrete. The review covered analysis of data for determination of price reduction for deficient material and overall variability of data. The analysis and evaluation indicated: (1) an overall reduction of less than 0.5 percent in the contract unit price for asphaltic concrete and portland cement concrete; (2) at least 74 percent of all projects meeting the requirements for 100 percent pay; (3) a significant decrease in overall price reduction for asphaltic concrete since the first evaluation of 1975; (4) some increase (from 1975) in non-uniformity in the production phase of asphaltic concrete with little or no difference in the compaction phase; (5) good to excellent control in production and testing of concrete used as critical concrete; and (6) a need for continual evaluation, such as the one presented here, for enhancement of the State's overall quality assurance system.

PB-293 931/2GA PC **A06**/MF **A01**
North Carolina State Univ. at Raleigh. Highway Research Program.
Determination of Air Void Content and Mixing Water Void Content of Hardened Concrete Using Electron Microscope Techniques. Part I. Determination of Air Content of Hardened Concrete Using Scanning Electron Microscope Techniques.
Final rept. Aug 74-Jun 78,
W. G. Mullen, and C. K. Waggoner. Jun 78, 114p ERSD-110-75-2-PT-1, FHWA/NC-75/2-0
Sponsored in part by North Carolina Dept. of Transportation and Highway Safety, Raleigh. See also Part 3, PB-293 932.

Descriptors: *Concretes, *Air entrainment, *Water cement ratio, Failure, Hydration, Electron microscopes, Statistical analysis, Visual inspection.
Identifiers: Scanning electron microscopy.

The use of the scanning electron microscope (SEM) to identify possible causes of failure of hardened concrete was examined. The three causes of failure researched were excess air content (Part I), and improper water-cement ratio and degree of hydration (Part III). Part II is a collection of unbound photographic arrays of air contents investigated in Part I to be used as visual comparison standards for determination of air content of hardened concrete. In Part I the SEM was used at a low magnification (80X) to photograph hardened concrete of various air contents (1-20%). A comparison standard was then prepared using 12 photographs to represent each air content. It is proposed that this standard be utilized for determination of air content of hardened concrete. Statistical analysis of the proposed standard indicates an accuracy of about plus or minus 1.5%.

PB-293 932/0GA PC **A05**/MF **A01**
North Carolina State Univ. at Raleigh. Highway Research Program.
Determination of Air Void Content and Mixing Water Void Content of Hardened Concrete Using Electron Microscope Techniques. Part III. Determination of Water-Cement Ratio and Degree of Hydration of Hardened Concrete Using Electron Microscope Technique.
Final rept. Aug 74-Jun 78,
W. G. Mullen, and G. W. Bodvarsson. Jun 78, 92p ERSD-110-75-2-PT-3, FHWA/NC-75/2-1
Sponsored in part by North Carolina Dept. of Transportation and Highway Safety, Raleigh. See also Part 1, PB-293 931.

Descriptors: *Concretes, *Air entrainment, *Water cement ratio, Failure, Hydration, Electron microscopes, Statistical analysis, Visual inspection.
Identifiers: Scanning electron microscopy.

For the analysis described in Part III, concrete samples of water-cement ratios ranging from .40-1.20 were prepared. The hydration time allowed, representing degree of hydration, varied from 1 day to 90 days (almost 100% hydration). SEM microphotos were taken at high magnification at each level of hydration for each of the water-cement ratios. The microphotos were then examined with emphasis upon trends that would aid in distinguishing between water-cement ratios and degree of hydration. A set of photographs was selected to illustrate an array scheme that is proposed to be developed for estimation of water-cement ratio and degree of hydration of an unknown based upon capillary morphology changes. Presented along with the proposed scheme is a selection of characteristic features that were identified as being indicative of water-cement ratio and/or degree of hydration. It is suggested that these features be utilized in these cases where determination strictly by the proposed standard is not sufficiently accurate.

PB-294 423/9GA PC **A19**/MF **A01**
Monsanto Research Corp., Dayton, OH. Dayton Lab.
Development of Low-Cost Roofing from Indigenous Materials in Developing Nations.
Final rept. 18 May 73-31 Dec 77,
George L. Ball, Ival O. Salyer, Dennis W. Werkmeister, R. A. Cass, and Arthur M. Usmani. 20 Feb 78, 434p MRC-DA-751
Contract AID/CM/ta-C-73-12
See also report dated 18 Dec 75, PB-249 317.

Descriptors: *Roofing, *Developing countries, *Composite materials, Fibers, Bagasse, Binders(Materials), Rubber fibers, Thermoplastic resins, Fabrication, Compression molding, Cost estimates, Philippines, Jamaica, Ghana.
Identifiers: Developing country application.

This document covers a four-year research program to develop low-cost roofing from indigenous materials in three developing nations (Philippines, Jamaica, and Ghana). In Phase I, resources were surveyed, and collaborating individuals and organizations defined. In Phase II, experimental roofing composite materials systems were developed and optimized. In Phase III, demonstrations of the roofing manufacture were conducted and experimental roofs installed. Four composite panel roofing material systems were developed which use major percentages of indigenous bagasse filler, and minor mounds amounts of phenolic or other resin binder. Three of the four processes use an intensive (Banbury) mixer. All four have compression molding as a final process step in panel fabrication. The products range in raw material cost from 6-14 cents per square foot of roofing panel, depending on composition, resin content, etc. The program was implemented in the three participating countries through advisory committees and technical working groups. Local labor, materials, and facilities were used to demonstrate manufacture of roofing by one or more of the processes.

PB-294 622/6GA PC **A02**/MF **A01**
United Nations Industrial Development Organization, Vienna (Austria).
International Forum on Appropriate Industrial Technology Held at New Delhi/Anand, India on November 20-30, 1978. The Role of National Institutions and Raw Materials Problems in Building Materials Industries.
Background paper,
N. R. Hill. Oct 78, 24p
Report of Working Group No. 5, Appropriate Technology for the Production of Cement and Building Materials. Sponsored in part by Agency for International Development, Washington, DC.

Descriptors: *Construction materials, *Technology assessment, Developing countries, Raw materials, Industries, Production planning, Industrial training, Laboratories.
Identifiers: Appropriate technology, Developing country application.

A common problem affecting the development of building materials and construction in developing countries is the lack of adequate expertise and laboratory facilities for the evaluation of suitable deposits of raw materials. This paper stresses the responsibility that rests with governments to ensure that trained staff and adequate central surveying and testing facilities are available.

13D. Containers and Packaging

AD-A065 092/9GA PC **A02**/MF **A01**
Air Force Packaging Evaluation Agency, Wright-Patterson AFB, OH.
Analysis of Packaging for the LN-15S Inertial Measurement Unit.
Final rept.,
Frank C. Jarvis. Oct 78, 24p Rept no. PTPT-78-21

Descriptors: *Shipping containers, *Cushioning, Pads(Cushions), Packing materials, Shock tests, Drop tests, Field tests.

The evaluation of the LN-15S Inertial Measurement Unit (IMU) packaging revealed that impacts on the bottom surface of the shipping container generated shock levels on the IMU which were 67% greater than the specified fragility of this item. The problem was caused by a combination of a cushion 'grip effect' of the side cushion pads and a temporary set of the cushioning material. (Author)

AD-A065 183/6GA PC **A02**/MF **A01**
Air Force Packaging Evaluation Agency, Wright-Patterson AFB, OH.
Packaging and Shipping Analysis of the LN-14 Platform Module.
Final rept.,
Frank C. Jarvis. Oct 78, 19p Rept no. PTPT-78-22

Descriptors: *Packaging, *Shipping containers, Platforms, Fiberboard, Drop tests, Insulation, Simulation, Polyurethane resins, Foam, Accelerometers, Test methods, Logistics support.
Identifiers: *LN 14 platform modules, Pallets.

The packaging analysis of the LN-14 Platform Module revealed that the cushioning material in test pack contained a combination of densities and formulations which reduced the effectiveness of the pack. It was also determined that the fiberboard inserts of the inner carton allowed the platform to 'roll' inside the inner carton if the platform was not properly positioned in the pack. (Author)

AD-A065 402/0GA PC **A02**/MF **A01**
Air Force Packaging Evaluation Agency, Wright-Patterson AFB, OH.
Analysis of Packaging for the 7900D Gyro,
Frank C. Jarvis. Dec 78, 12p Rept no. PTPT-78-26

Descriptors: *Packaging, *Gyroscopes, Shock resistance, Drop tests, Impact shock, Comparison, Commercial equipment.

In support of Oklahoma City Air Logistics Center (OC-ALC), three different pack designs were evaluated for packaging of the 7900D Gyro. Based on performance none of the three packs were considered to be satisfactory. Instead, a corner pad design approach recommended by AFPEA was incorporated by OC-ALC/DSPC with an XA5 Fast Pack to provide a system that adequately protects the gyro. (Author)

13F. Ground Transportation Equipment

AD-A065 147/1GA PC **A04**/MF **A01**
Army Mobility Equipment Research and Development Command, Fort Belvoir, VA.
Baseline Tests of the Electra-Van Multipurpose Electric Van.
Test rept.,
Edward J. Dowgiallo, Jr., Cornelius E. Bailey, Jr., Ivan R. Snellings, and William H. Blake. Nov 78, 71p MERADCOM-2260, DOE-CONS/0421-3
Contract EC-77-A-31-1042

Descriptors: *Vans, *Electric propulsion, *Road tests, Performance(Engineering), Electric batteries, Base lines, State of the art, Test facilities, Experimental design.
Identifiers: *Electra van, *Electric vehicles.

The Electra-Van, Model 500-108, an electric, quarter-ton, multipurpose van, was tested at the US Army Aberdeen Proving Ground Test Facilities in Aberdeen, Maryland, as part of a Department of Energy (DOE) project to characterize the state-of-the-art of electric vehicles. The Electra-Van is manufactured in Austin, Texas, by Jet Industries, Inc. It is a converted Subaru minivan. It is powered by eighteen, 6-volt batteries that are connected to the motor through an SCR controller actuated by a foot pedal to control motor speed. The 14.2-horsepower motor drives the rear wheels through a four-speed manual transmission. No regenerative braking is provided. (Author

AD-A065 451/7GA PC **A03**/MF **A01**
DARCOM Ammunition Center, Savanna, IL. Evaluation Div.
Rail Impact Tests of Gondola and Flatcar Transport of Empty 20-Foot Intermodal Containers.
30 Sep 77, 45p Rept no. EVT-23-77

Descriptors: *Railroad cars, *Gondolas, Logistics support, Containers, Transport, Test methods.

The current CONUS commercial COFC railcar fleet of less than 7,000 cars probably could support the present Containerized Ammunition Distribution System (CADS) program if proper attention was directed to the existing car shortage problem. However, the fleet would fall far short in the event of mobilization. Therefore, to aid in alleviating the car shortage problem, it was proposed that available conventional flatcars and gondola cars be used to move 20-foot intermodal freight containers when the containers are empty. The rail impact testing program that resulted from this proposal evaluated the container blocking and bracing methods shown in the appendix section of this report. These restraint methods were successful in securing the empty intermodal containers in both the flatcar and gondola types of railcars. This report details the results of that testing program. (Author)

PB-292 654/1GA PC **A07**/MF **A01**
Transportation Systems Center, Cambridge, MA.
Comparison of Linear Induction Motor Theories for the LIMRV and TLRV Motors.
Final rept. Jul-Aug 77,
John J. Stickler. Jan 78, 146p DOT-TSC-FRA-77-21, FRA/ORD-77/68

Descriptors: *Induction motors, *Rapid transit railways, Linear systems, Electric railroads, Theory, Computer programs, Mathematical models.
Identifiers: *Linear induction motors, Linear induction motor research vehicles, Tracked air cushion vehicles.

The Oberretl, Yamamura, and Mosebach theories of the linear induction motor are described and also applied to predict performance characteristics of the TLRV & LIMRV linear induction motors. The effect of finite motor width and length on performance predictions is examined for each theory. The edge and end effects are shown to play a dominant role in determining motor performance. The LIM thrusts predicted by the Oberretl, Yamamura, and Mosebach computer models are in reasonable agreement over most of the LIM speed range. The Oberretl theory tends to predict somewhat lower thrust values than the Yamamura and Mosebach theories; possible causes for the divergent thrust predictions are discussed. Computer listings for the Oberretl and Yamamura linear induction motor theories are presented in the appendix.

PB-293 317/4GA PC **A10**/MF **A01**
Pacific Consultants, Boston, MA.
Proceedings: Seminar on the Use of Composite Third Rail in Electrified Transit and Commuter Rail System.
Seminar proceedings,
Harold D. Decker. Nov 78, 217p* UMTA-MA-06-0025-78-13, DOT-TSC-UMTA-78-31
Contract DOT-TSC-1289

Descriptors: *Electric railroads, *Railroad tracks, *Meetings, Electrification, Composite materials, Rapid transit railways, Maintenance, Electric power distribution.
Identifiers: *Third rails.

The seminar was organized at the request of UMTA to disseminate accurate information on, and experience with, composite (aluminum and steel) third, or contact rail, in wayside power distribution systems of electrified urban rail properties. The seminar provided the opportunity for the exchange of pertinent information among the suppliers, using properties, consultants and designers, potential users, and government agencies. This document contains the transcripts of the presentations made to the seminar participants, as well as the question-and-answer sessions which followed each presentation and the round table discussion of Thursday, September 15, 1977. Information pertinent to the seminar, but not available in detail at the time of the conference, is presented in a series of four appendixes, namely: A--Third Rail - Deicing; B--Welding Composite Rail on BART; C--Maintenance of Rails on BART; and D--Relative Costs of Composite and Steel Third Rail Installations. This document also provides a list of all participants and their addresses as of September 14, 1977, as well as a list of Electrified Transit Properties.

PB-293 423/0GA PC **A05**/MF **A01**
Lake Champlain Basin Study, Burlington, VT.
An Analysis of the Transport of Coal and Oil to the Lake Champlain Basin.
Final rept.,
Craig Heindel. May 78, 82p LCBS-06
Report on Lake Champlain Basin Study.

Descriptors: *Transportation, *Water transportation, *Lake Champlain, *Hudson River, Coal, Petroleum products, Barges, Tank trucks, Railroads, Trucks, Hazards, Environmental impacts, Storage, New York, Vermont.
Identifiers: New England, Oil spills.

The objective of this report was to prepare an analysis of the various types of oil and coal transport in the Lake Champlain Basin. The three types of transport presently in use are: (1) barges, which utilize the Hudson River, the Champlain Canal, and Lake Champlain; (2) trucks, coming from oil suppliers in the Albany, New York area, and several locations in New England; and (3) railroads, transporting petroleum products from the Albany, New York area. Economic and environmental factors such as projections relating to oil use and storage, potential oil spill concerns, distance, and capacity of carrying units were also considered.

PB-293 500/5GA PC **A04**/MF **A01**
National Transportation Safety Board, Washington, DC. Office of the Managing Director.
Safety Effectiveness Evaluation of the Federal Railroad Administration's Hazardous Materials and Track Safety Programs.
8 Mar 79, 59p NTSB/SEE-79/2

Descriptors: *Railroads, *Safety, *Cargo transportation, *Railroad tracks, Accident prevention, Standards, Tank cars, Safety engineering, Couplers, Inspection, Railroad cars, Railroad trains, Dynamics.
Identifiers: *Hazardous materials transportation, Railroad accidents, *Railroad derailments.

The Congress directed NTSB to 'conduct a thorough review of hazardous materials rail shipments and the applicable Federal (track) standards as well as determine how the Federal Railroad Administration (FRA) can more effectively prevent the occurrence and reduce the severity of derailments of hazardous materials.' The report is based on information obtained through interviews and reviews of technical literature and Department of Transportation organizational documents. The review was limited to the derailment of hazardous materials and the applicable track standards. The review found that FRA needs a full-time railroad safety expert at the head of the Office of Safety. The data base is inadequate to define and rate the problems. The program should be based on risks and the goals and objectives should be based on risks and the level of risk that is acceptable. The Federal/State partnership required by the Federal Railroad Safety Act of 1970 should be improved for more effective use of State inspectors.

PB-293 515/3GA PC **A05**/MF **A01**
De Leuw, Cather-Parsons and Associates, Washington, DC.
Signaling and Traffic Control System Standards. Volume 1.
Final rept.
Feb 79, 98p F205-50, FRA/NECPO-79/6
Contract DOT-FR-76048
Supersedes PB-283 651.

Descriptors: *Railroads, *Traffic control, *Automatic control, *Standards, Switching systems, Electric control, Circuits, Wiring diagrams, Safety engineering, Specifications.

This document defines the standards and specifications to be applied to the signaling and traffic control system of the Northeast Corridor Improvement Project. The document is in two volumes. Volume 1 contains the standards and specifications generally applicable to the design of the basic signaling and traffic control system and

those specifically associated with the vital portion of the system to be installed on or near the tracks. Typical circuits and drawing format requirements are included.

PB-293 580/7GA PC **A10**/MF **A01**
Jet Propulsion Lab., Pasadena, CA.
Automotive Fuel Economy and Emissions Experimental Data.
Final rept. Jun 75-Dec 76,
Mack W. Dowdy, and Ronald L. Baisley. Feb 79, 217p JPL-PUB-78-21, DOT-HS-803 808, DOT-TSC-NHTSA-19-15
Contract DOT/TSC-RA-75-41

Descriptors: *Automobiles, *Exhaust emissions, *Fuel consumption, Experimental data, Performance evaluation, Automobile engines, Exhaust gases, Circulation, Engine starters, Air intakes, Carbon monoxide, Hydrocarbons, Nitrogen oxides.
Identifiers: *Fuel economy, *Corrective maintenance, *Light duty vehicles, Chrysler vehicles, Plymouth Valiant automobiles, Motor vehicles(1975 models), Exhaust gas recirculation systems.

The purpose of this effort was to generate experimental data to support an assessment of the relationship between automobile fuel economy and emission control systems. Tests were made at both the engine and vehicle levels. Detailed investigations were made on cold-start emissions devices, exhaust gas recirculation systems, and air injection reactor systems. Based on the results of engine tests, an alternative emission control system and modified control strategy were implemented and tested in the vehicle. With the same fuel economy and NOx emissions as the stock vehicle, the modified vehicle reduced HC and CO emissions by about 20 percent. By removing the NOx emissions constraint, the modified vehicle demonstrated about 12 percent better fuel economy than the stock vehicle.

PB-293 857/9GA PC **A05**/MF **A01**
AiResearch Mfg. Co. of California, Torrance.
Wayside Energy Storage Study. Volume I. Summary.
Final rept. May 77-Jun 78,
L. J. Lawson, and L. M. Cook. Feb 79, 79p DOT-TSC-FR-79-7.I, FRA/ORD-78/78.I
Contract DOT-TSC-1349
See also Volume 2, PB-293 858.
Also available in set of 4 reports PC E15, PB-293 856-SET.

Descriptors: *Electric locomotives, *Energy storage, Electric railroads, Braking, Kinetic energy, Flywheels, Direct energy conversion.
Identifiers: Wayside energy storage system, Regenerative braking, Energy conservation.

Volume I summarizes an in-depth application study which was conducted to determine the practicality and viability of using large wayside flywheels to recuperate braking energy from freight trains on long downgrades. The study examined the route structures of nine U.S. railroads and identified various wayside energy storage system (WESS) configurations. The optimum means of transferring energy from the train to the wayside was by means of a high-voltage ac catenary from either regenerative electric locomotives or modified dual-mode (diesel-electric/electric) locomotives. The application of WESS was then analyzed for four specific routes of typical U.S. railroads. These routes and the annual returns on investment (ROI's) resulting from WESS deployment on existing railroads were as follows: Atchinson, Topeka, and Santa Fe (Los Angeles to Belen), 27.1 percent; Black Mesa and Lake Powell, 17.3 percent; Conrail (Pittsburgh to Harrisburg), 22.0 percent; Union Pacific (Los Angeles to Salt Lake City) 20.2 percent.

PB-293 858/7GA PC **A13**/MF **A01**
AiResearch Mfg. Co. of California, Torrance.
Wayside Energy Storage Study. Volume II. Detailed Description and Analysis.
Final rept. May 77-Jun 78,
L. J. Lawson, and L. M. Cook. Feb 79, 291p DOT-TSC-FRA-79-7.II, FRA/ORD-78/78.II
Contract DOT-TSC-1349
See also Volume 1, PB-293 857, and Volume 3, PB-293 859.
Also available in set of 4 reports PC E15, PB-293 856-SET.

Descriptors: *Electric locomotives, *Energy storage, Electric railroads, Braking, Kinetic energy, Flywheels, Direct energy conversion, Computer programs.
Identifiers: Wayside energy storage system, Regenerative braking, Energy conservation.

Volume II summarizes an in-depth application study which was conducted to determine the practicality and viability of using large wayside flywheels to recuperate braking energy from freight trains on long downgrades. The study examined the route structures of nine U.S. railroads and identified various wayside energy storage system (WESS) configurations. The optimum means of transferring energy from the train to the wayside was by means of a high-voltage ac catenary from either regenerative electric locomotives or modified dual-mode (diesel-electric/electric) locomotives.

PB-293 859/5GA PC **A24**/MF **A01**
AiResearch Mfg. Co. of California, Torrance.
Wayside Energy Storage Study. Volume III. Engineering Economics Analysis: Data and Results.
Final rept. May 77-Jun 78,
L. J. Lawson, and L. M. Cook. Feb 79, 570p DOT-TSC-FRA-79-7.III, FRA/ORD-78/78.III
Contract DOT-TSC-1349
See also Volume 2, PB-293 585, and Volume 4, PB-293 860.Portions of this document are not fully legible.
Also available in set of 4 reports PC E15, PB-293 856-SET.

Descriptors: *Electric locomotives, *Energy storage, Electric railroads, Braking, Kinetic energy, Flywheels, Direct energy conversion, Economic analysis.
Identifiers: Wayside energy storage system.

Volume III contains the detail of the engineering economics analysis which showed attractive returns on investment for deployment of WESS on existing U.S. railroads.

PB-293 860/3GA PC **A04**/MF **A01**
AiResearch Mfg. Co. of California, Torrance.
Wayside Energy Storage Study. Volume IV. Dual-Mode Locomotive: Preliminary Design Study.
Final rept. Jun 78-Oct 78,
L. J. Lawson, and L. M. Cook. Feb 79, 54p DOT-TSC-FRA-79-7.IV, FRA/ORD-78/78.IV
Contract DOT-TSC-1349
See also Volume 3, PB-293 859.
Also available in set of 4 reports PC E15, PB-293 856-SET.

Descriptors: *Electric locomotives, *Energy storage, Electric railroads, Braking, Kinetic energy, Flywheels, Direct energy conversion.
Identifiers: Wayside energy storage system, Regenerative braking, Energy conservation.

A preliminary design study was conducted to confirm the technical viability and economic attractiveness of the dual-mode locomotive concept based on the most common U.S. road locomotive, the SD40-2. The study examined the existing characteristics of the base locomotive and ensured that operation in the diesel mode would not be compromised by a locomotive which has a pantograph, transformer, converter, and choke added to permit operation from a 50 kV catenary. The study concluded that the concept is technically viable (although some equipment is only available overseas) and is economically attractive, the top line modification cost being $217,500.

13G. Hydraulic and Pneumatic Equipment

N79-19348/8GA PC **A14**/MF **A01**
Von Karman Inst. for Fluid Dynamics, Rhode-Saint-Genese (Belgium).
Industrial Compressors, Volume 1.
1976, 308p VKI-LECTURE-Ser-91-V-1
Seri-2. Conf-Lecture Held at Rhode Saint Genese, Belgium, 10-14 May 1976.

Descriptors: *Compressors, Lectures, *Structural design, Engine failure, Flutter, Gas dynamics, Gas turbine engines, Industries, Turbomachinery.
Identifiers: Meetings, Belgium.

For abstract, see STAR 1710

N79-19356/1GA PC **A11**/MF **A01**
Von Karman Inst. for Fluid Dynamics, Rhode-Saint-Genese (Belgium).
Industrial Compressors, Volume 2.
1976, 246p VKI-LECTURE-Ser-91-V-2
Seri-2. Conf-Lecture Held at Rhode Saint Genese, Belgium, 10-14 May 1976.

Descriptors: *Compressors, Lectures, *Turbocompressors, *Turbomachinery, Aerodynamics, Bearings, Dynamic characteristics, Erosion, Flutter, Inlet flow, Mechanical properties, Reynolds number, Statics, Stresses, Turbomachine blades, Vibration.
Identifiers: Meetings, Belgium.

For abstract, see STAR 1710

PATENT-4 134 426 Not available NTIS
Department of the Navy Washington DC
Seawater Hydraulic Motor Distributing Valve Based on a Hydrosphere Bearing.
Patent.
Earl J. Beck. Filed 7 Feb 78, patented 16 Jan 79, 6p AD-D005 811/5, PAT-APPL-875 825
Supersedes PAT-APPL-875 825-78.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $0.50.

Descriptors: *Patents, *Hydraulic equipment, *Underwater tools, Portable equipment, Sea water, Bearings, Hydraulic power, Motors.
Identifiers: PAT-CL-137-625 23.

The patent relates to a commutating or distributing valve for timing and distributing high pressure seawater to a number of individual pistons in a multi-piston hydraulic motor, using seawater under pressure as a motivating fluid. (Author)

13H. Industrial Processes

AD-A065 305/5GA PC **A03**/MF **A01**
Vought Corp., Sterling Heights, MI. Michigan Div.
Forming Prescored Tungsten Alloy Hemispheres.
Final rept.
Sep 78, 42p Rept nos. 7-34000/78R-8, MDV-17-35
Contract DAAK10-77-C-0221

Descriptors: *Tungsten, *Powder metallurgy, *Material forming, *Hemispheres, Industrial production, Inspection, Quality assurance, Military requirements, Disks, Dies, Porosity, Defects(Materials).

It was planned to further develop the manufacturing process by eliminating certain time consuming functions such as grit blasting and cleaning by a more rapid and economical means. Other economies were planned especially in the inspections of the part but were not implemented due to problems experienced in forming the hemispheres. Based on the experience of the program conducted during 1976, a 3-percent overage of discs was initially ordered (2472 discs). In order to complete the contract quantity, an additional 358 discs were purchased for processing, completing certifications and doing evaluation tests which brought the total purchased quantity to 2830 discs. The forming processes were carefully monitored to determine the most successful forming temperature and die strokes. It is felt that the successful forming of the tungsten hemispheres is directly dependent on material quality and uniformity. Varying amounts of porosity were found in the discs during this program which contributed to about 97 percent of the rejected hemispheres. A follow-on development program to improve the material quality and reduce the scrappage during forming has been proposed.

AD-A065 360/0GA PC **A05**/MF **A01**
Army Armament Research and Development Command, Dover, NJ. Large Caliber Weapon Systems Lab.
A Round-Robin Evaluation of Adhesive Bonding Processes Related to the Shelter Industry.
Technical rept.,
Raymond F. Wegmen, William J. Russell, Elizabeth A. Garnis, and David W. Levi. Nov 78, 87p ARLCD-TR-78047, AD-E400 268

Descriptors: *Adhesives, *Adhesive bonding, *Aluminum alloys, *Metal metal bonds, Surfaces, Cleaning, Etching, Thickness, Honeycomb structures, Shelters, Humidity, Stress testing, Shear strength, Statistical analysis, Interfaces, Stress corrosion.
Identifiers: *Primers(Coatings), Aluminum alloy 6061, Aluminum alloy 5052.

Metal parts of 5052 H 34 and 6061 T-6 aluminum alloys were supplied to five companies with the request to treat the parts in their production cleaning facilities. A portion of the parts were to be bonded as prepared and others were to be primed and then bonded. The standard cleaning method was the FPL etch. The primer used was BR 127, with two companies supplying extra panels bonded with FM 47. The adhesive used was Reliabond 7114, with the exception of one set which was bonded with Hysol En 9601 adhesive. Both lap shear and wedge test panels were prepared, bonded, and supplied for testing. Lap shear tests were run at 23 C(73F), 60 C(140F) and 93 C(200F). Lap shear tests at 60 C after 100 hr and 1000 hr immersion in 60 C water were run to predict durability. ASTM D 2919 durability tests at 60 C/95%RH and wedge tests at 60 C/95-100%RH were also carried out. The results indicate that the FM 47 primer is not as thickness- sensitive as the BR 127 primer. The 5052 H-34 aluminum alloy is not as sensitive to stress-corrosion cracking at the interface as is the 6061 T-6 alloy. The use of a primer does not significantly improve the durability of bonds to 5052H-34 alloy. However, to improve the durability of bonds to 6061 T-6 alloy, a primer is necessary.

AD-A065 437/6GA PC **A04**/MF **A01**
Advisory Group for Aerospace Research and Development, Neuilly-sur-Seine (France).
Computer Aid in the Production Design Office.
Conference proceedings.
Jan 79, 58p Rept no. AGARD-CP-250
Presented at the Meeting of the AGARD Structures and Materials Panel (47th), 25-26 Sep 78, Florence, Italy.

Descriptors: *Computer aided design, *Computer graphics, Aircraft industry, Aerospace systems, Western Europe, Manufacturing, Computer applications, Machining, Data bases, Standardization, Three dimensional, Man machine systems, Computer programs, Aeronautical engineering, Foreign technology.
Identifiers: NATO furnished.

Partial contents: Present Technical Technical Possibilities--Graphical NC systems as a basis for progress towards the integration of design, planning and machining, Un systeme de conception et fabrication assistees par ordinateur adapte a la conception des objets tridimensionnels, DRAPO (un systeme de conception et de fabrication assistees par ordinateur), and Some requirements for a communication system guiding the relations between the design engineer and a general data base; and Applications in Design Offices--CAD for electric systems design, Aeritalia point of view and objectives on computer aided design, and A discussion of the production design office benefits of CAD.

NTIS/PS-79/0380/0GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Coke Oven Air and Water Pollution (Citations from the Engineering Index Data Base).
Rept. for 1970-Mar 79,
Audrey S. Hundemann. May 79, 191p*
Supersedes NTIS/PS-78/0297.

Descriptors: *Bibliographies, *Coking, *Air pollution, *Water pollution, *Industrial wastes, Monitoring, Sampling, Flue gases, Chemical analysis, Sulfur dioxide, Hydrogen sulfide, Ammonia, Phenols, Particles, Trace elements, Quenching media, Air pollution control, Water pollution control, Abstracts.

Monitoring, sampling, analyzing, transport properties, and control of emissions and effluents are cited in this compilation from worldwide journals. Pollutants described are sulfur dioxide, hydrogen sulfide, ammonia, phenols, benzopyrene, particulates and other trace elements and compounds. Process and equipment modifications, such as pipeline charging, wet and dry quenching, retrofitting, and oven leakage preventives are included. (This updated bibliography contains 185 abstracts, 15 of which are new entries to the previous edition.)

NTIS/PS-79/0388/3GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Metal Drawing (A Bibliography with Abstracts).
Rept. for 1964-Mar 79,
William E. Reed. May 79, 117p*
Supersedes NTIS/PS-78/0370, NTIS/PS-77/0343, NTIS/PS-76/0355, and NTIS/PS-75/162.

Descriptors: *Metal drawing, *Bibliographies, Deformation, Friction, Dies, Sheets, Wire, Tubes, Lubricants, Deep drawing, Ultrasonic radiation, Abstracts.

Citations include application of ultrasonic energy, effects of friction, lubricants and lubrication, and deformation. (This updated bibliography contains 110 abstracts, 12 of which are new entries to the previous edition.)

N79-19335/5GA PC **A02**/MF **A01**
Case Inst. of Tech., Cleveland, OH.
Applications of High Power Lasers.
Final Report.
J. C. Angus. 21 Mar 79, 19p NASA-CR-158234
Grant NSG-3074

Descriptors: *High power lasers, *Holography, Laser applications, Reflection, Carbon dioxide lasers, Circuit boards, Grinding(Material removal), Laser drilling, Laser welding.
Identifiers: *Laser machining, Helium neon lasers, Infrared radiation, Light(Visible radiation), Metals, Ceramics.

For abstract, see STAR 1710

N79-19828/9GA PC **A04**/MF **A01**
Colorado State Univ., Fort Collins. Dept. of Physics.
Industrial Ion Source Technology.
Annual Report.
H. R. Kaufman, and R. S. Robinson. Dec 78, 73p NASA-CR-159534
Grant NSG-3086

Descriptors: *Ion beams, *Sputtering, *Technology assessment, Argon, Clumps, Cones, Deposition, Diffusion, Etching, Krypton, Mathematical models, Scattering cross sections, Textures, Xenon.

For abstract, see STAR 1710

PB-293 040/2GA PC **A05**/MF **A01**
Case Western Reserve Univ., Cleveland, OH.
NSF/RANN Grantees' Conference on Production Research and Industrial Automation (3rd), Held at Case Western Reserve University, Cleveland, Ohio on October 28-29, 1975.
1975, 98p NSF/RA/T-75/036
Grants NSF-AG-393, NSF-GI-34274X
See also report dated 1976, PB-265 817. Sponsored in part by Rochester Univ., NY. Production Automation Project, and Xerox Corp., Rochester, NY.

Descriptors: *Production engineering, *Automation, *Meetings, Numerical control, Materials handling, Manufacturing, Fabrication, Robots, Systems engineering, Industrial engineering, Assembling, Injection molding, Steel making, Automatic control equipment.
Identifiers: Computer aided manufacturing.

Titles of papers presented at this conference in Cleveland, Ohio at Case Western University include: the PADL System, an automated bending system for the fabrication of ship frames via self-adaptive computer control; tool wear sensors; metalworking under pressure, a substitutional technology for energy and materials conservation; computer-aided injection molding system; group technology applied to the automatic handling of small parts; systems engineering of computer control of steel making complexes; modeling and optimization of the iron-making, steel-making operational sequence; in-process optical gauging for numerical machine tool control; exploratory research in industrial modular assembly; exploratory research in advanced automation; a language for assembly; optimal planning of computerized manufacturing systems; robot computations for orienting workpieces; identification of CAD/CAM research and socio-technological researchers and their impact on manufacturing productivity functions; and collaborative study on product system productivity.

PB-293 975/9GA PC **A02**/MF **A01**
Chamber of Foreign Trade of the German Democratic Republic, Berlin.
The German Democratic Republic's Economic/Technological Congress in the U.S.A. (1st). Lecture 15. Automation in Welding Engineering for Small and Medium-Lot Quantities.
Werner Gilde. 1978, 12p
See also Lecture 14, PB-293 974 and Lecture 16, PB-293 976. Prepared by Central Inst. for Welding Technology, Halle (German D.R.). Presented at 'Days of Engineering of the GDR'.
Also available in set of 16 reports PC E19, PB-293 960-SET.

Descriptors: *Welding, East Germany, Automation, Adaptive systems, Technology.
Identifiers: Flexible manufacturing.

The report is one from a series of lectures presented in the United States during 1978. Each paper discusses, briefly, a particular topic detailing either industrial development or economic growth in the German Democratic Republic.

13I. Machinery and Tools

N79-19174/8GA PC **A02**/MF **A01**
RCA Labs., Princeton, NJ.
Development and Evaluation of Die Materials for Use in the Growth of Silicon Ribbons by the Inverted Ribbon Growth Process. Task 2: LSSA Project.
Quarterly Report, 1 Oct. - 31 Dec. 1978.
M. T. Duffy, S. Berkman, H. I. Moss, and G. W. Cullen. Dec 78, 16p NASA-CR-158357, PRRL-78-CR-7
Contracts NAS7-100, JPL-954901
Subm-Prepared from JPL.

Descriptors: *Crystal growth, *Dies, *Ribbons, *Silicon, Carbon, Coatings, Evaluation, Silicon nitrides, Thermal stability, X ray analysis.
Identifiers: Silicon oxides.

For abstract, see STAR 1710

PATENT-4 140 592 Not available NTIS
Department of the Air Force Washington DC
Gas Bearing Surface Coating.
Patent,
Vincent A. Orlando. Filed 30 Mar 78, patented 20 Feb 79, 3p AD-D005 819/8, PAT-APPL-891 800
Supersedes PAT-APPL-891 800-78, AD-D004 943.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $0.50.

Descriptors: *Patents, *Gas bearings, *Coatings, *Anodic coatings, *Metal coatings, Chromium, Life expectancy.
Identifiers: PAT-CL-204-56, Chromium coatings, Beryllium.

This invention relates to a method for increasing the life and reliability of beryllium gas bearings by applying a coating of chromium to one bearing surface and an anodized beryllium coating to its mating surface.

PB-293 972/6GA PC **A02**/MF **A01**
Chamber of Foreign Trade of the German Democratic Republic, Berlin.
The German Democratic Republic's Economic/Technological Congress in the U.S.A. (1st). Lecture 12. High-Productivity Machine Tools and Equipment from the GDR,
Helmut Kessner. 1978, 14p
See also Lecture 11, PB-293 971, and Lecture 13, PB-293 973. Prepared by Research Center of the Machine Tool Industry, Chemnitz (Germany D.R.). Presented at 'Days of Engineering of the GDR'.
Also available in set of 16 reports PC E19, PB-293 960-SET.

Descriptors: *Machine tools, East Germany, Technology.

The report is one from a series of lectures presented in the United States during 1978. Each paper discusses, briefly, a particular topic detailing either industrial development or economic growth in the German Democratic Republic.

PB-293 973/4GA PC **A02**/MF **A01**
Chamber of Foreign Trade of the German Democratic Republic, Berlin.
The German Democratic Republic's Economic/Technological Congress in the U.S.A. (1st). Lecture 13. The Efficient Manufacture of Spur Gears on WMW Machine Tool Products,
Manfred Thalemann. 1978, 13p
See also Lecture 12, PB-293 972, and Lecture 14, PB-293 974. Presented at 'Days of Engineering of the GDR'.
Also available in set of 16 reports PC E19, PB-293 960-SET.

Descriptors: *Machine tools, *Gear cutting, East Germany, Spur gears, Manufacturing, Technology.

The report is one from a series of lectures presented in the United States during 1978. Each paper discusses, briefly, a particular topic detailing either industrial development or economic growth in the German Democratic Republic.

PB-293 974/2GA PC **A02**/MF **A01**
Chamber of Foreign Trade of the German Democratic Republic, Berlin.
The German Democratic Republic's Economic/Technological Congress in the U.S.A. (1st). Lecture 14. High-Productivity Machine Tools for Large Prismatic Workpieces and Roll-Turning Plus Roll-Grinding Machine Tools,
Gerald Krahnert. 1978, 17p
See also Lecture 13, PB-293 973, and Lecture 15, PB-293 975. Prepared by VEB Werkzeugmaschinenkombinat 'Fritz Heckert', Chemnitz (German D.R.). Presented at 'Days of Engineering of the GDR'.
Also available in set of 16 reports PC E19, PB-293 960-SET.

Descriptors: *Machine tools, East Germany, Technology.

The report is one from a series of lectures presented in the United States during 1978. Each paper discusses, briefly, a particular topic detailing either industrial development or economic growth in the German Democratic Republic.

13J. Marine Engineering

AD-A064 861/8GA PC **A04**/MF **A01**
Naval Postgraduate School, Monterey, CA.
XR-3 Bow Seal Performance as a Function of Seal Geometry.
Master's thesis,
John Arthur Fjelde, and Carl Eric Gaenslen. Dec 78, 59p

Descriptors: *Surface effect ships, *Gas seals, *Drag, Lift, Hydrostatics, Hydrodynamics, Shape, Geometry, Rubber, Aluminum, Ship bows, Loads(Forces), Air cushion vehicles, Theses.
Identifiers: Captured Air Bubble Craft, Air Spring Seals, XR-3 Captured Air Bubble Craft, Bow Seals.

A series of tests was conducted to determine the effects of bow seal shape upon the performance of the XR-3 captured air bubble testcraft. The life and drag forces experienced by the bow seal, plotted versus velocity, are presented and analyzed. (Author)

AD-A064 998/8GA PC **A05**/MF **A01**
Naval Postgraduate School, Monterey, CA.
Incentivization of the Master Ship Repair Contract.
Master's thesis,
Gerald Frank Hesch. Dec 78, 90p

Descriptors: *Incentive contracts, *Shipbuilding, Repair, Modification, *Contract administration, Contract proposals, Scheduling, Quality control, Motivation, Manpower utilization, Vendors, Systems analysis, Theses.

This thesis is a study of various techniques which provide incentives for contractors for work under a Master Ship Repair (MSR) contract. These techniques are used to motivate the contractor to adhere to the original schedule without degradation of quality control when growth work or change orders entitle the contractor to an increase in price, changes in schedule, or both. The methodology used to investigate these techniques was primarily personal interviews with Government and contractor personnel involved in the ship repair/overhaul industry and literature research. The results of this study indicate contractors are incentivized to reduce schedule slippages by a process of: stabilizing regional workloads, supplementing training, coordinating conferences, increasing manning levels, and by changing certain milestone dates and work procedures. This thesis also proposes an award fee contract type which incorporates the above as an alternative to the contract type presently being used. (Author)

AD-A064 999/6GA PC **A09**/MF **A01**
Naval Postgraduate School, Monterey, CA
Planning Concepts for Activation of a Naval Shipyard.
Master's thesis,
Mahmoud Mazaheri. Dec 78, 192p

Descriptors: *Naval planning, *Shipyards, Naval operations, Navy, Naval procurement, Naval logistics, Management information systems, Management planning and control, Theses.

All too frequently, large industrial projects are designed and constructed without sufficient attention being paid to the resources required to operate the completed facilities. This thesis addresses some of the many issues associated with activating such an industrial complex--a conceptual naval shipyard. The planning, scheduling, coordination and control required to manage the activation of a shipyard together with the concepts of logistics support, project management and Management Information Systems (M.I.S.) are described. The crucial task of manpower planning is analyzed. A manpower recruitment model, and other issues to be considered for the special environment of the shipyard are also presented. The research concludes with an overall summary and recommendations for establishing a program office and the early start of the program. (Author)

AD-A065 007/7GA PC **A03**/MF **A01**
Wang (D. P.), Arlington, VA.
Oblique Water Entry and Exit of a Fully Ventilated Foil,
D. P. Wang. Jul 77, 40p
Contract N00167-77-M-8075

Descriptors: *Hydrofoils, *Supercavitating propellers, *Water entry, Hydrodynamic control surfaces, Sea states, Hydrodynamics, Loads(Forces), Moments, Coefficients, Propeller blades, Flow fields, Mathematical models, Cartesian coordinates, Boundary value problems, Integral equations.

The oblique entry of a two-dimensional, fully ventilated foil into a horizontal layer of water of arbitrary thickness is considered. When the thickness of the layer is finite, exit of the foil from the layer is studied. The present work is an extension of a previous one in which only vertical entry and exit of the foil were considered. The consideration of oblique entry makes the present solution useful in studying not only the advance ratio effect on a partially submerged supercavitating propeller but also many other problems, such as the high-speed water entry and exit of a wing or a control surface, the operation of a high-speed hydrofoil in a high sea state. The results obtained in this work indicate that the force and moment coefficients of a foil decrease as the advance ratio is reduced. (Author)

AD-A065 013/5GA PC **A03**/MF **A01**
Naval Sea Systems Command, Washington, DC.
Disabled Submarine. Requirements for Employment of U.S. Navy Submarine Rescue Systems.
Jun 78, 47p Rept no. NAVSEA-0994-LP-013-9010

Descriptors: *Submarines, *Rescues, *Submarine rescue vessels, Naval operations, Requirements, Missions, Submarine personnel.

The purpose of this document is to provide information concerning the U.S. Navy's capabilities in submarine rescue and to outline the requirements necessary for a submarine to be compatible with these capabilities. (Author)

AD-A065 065/5GA PC **A03**/MF **A01**
Iowa Inst. of Hydraulic Research, Iowa City.
Ship Boundary Layers,
L. Landweber, and V. C. Patel. 1979, 34p Rept no. IIHR-REPRINT-465
Contract N00014-75-C-0273
Availability: Pub. in Annual Review of Fluid Mechanics, v11 p173-205 1979.

Descriptors: *Ships, *Hydrodynamic configurations, Boundary layer flow, Wake, Ocean waves, Potential flow, Viscous flow, Reprints.

No abstract available.

AD-A065 102/6GA PC **A06**/MF **A01**
David W. Taylor Naval Ship Research and Development Center, Bethesda, MD. Ship Performance Dept.
Performance of a TAP-2 Hydrofoil.
Departmental rept.,
Pierre Lafrance. Jun 78, 102p Rept no. DTNSRDC/SPD-0843-01

Descriptors: *Hydrofoils, *Hydrodynamics, Performance tests, Cavitation, Lift to drag ratio, Experimental data, Ventilation, Hydrostatic pressure, Water tunnels, Struts, Test facilities, Small ships, Naval vessels.
Identifiers: *TAP 2 hydrofoils.

This report discusses the measured performance of the TAP-2 hydrofoil, a 'mixed foil' designed to operate fully wetted at takeoff (35 knots) and which, through a change in geometry, can fly fully ventilated at cruise speed (60 knots). At takeoff, TAP-2 has a lift-to-drag ratio of 13 at the design lift coefficient; the corresponding figure for cruise speed is between 7 and 8. Predictive extrapolation to prototype scale is discussed and contrasted with our present understanding of the scaling laws associated with ventilation. (Author)

AD-A065 169/5GA PC **A04**/MF **A01**
San Diego Aircraft Engineering, Inc., CA.
Conceptual Design Study of Air Bearing/Suction Hold-Down Devices for Vertical Landing Aircraft.
Interim rept.,
P. Sorensen. 21 Mar 77, 61p SAE-77-005, NADC-79025-20
Contract N62269-77-C-0046

Descriptors: *Vertical takeoff aircraft, *Fastenings, *Flight decks, Gas bearings, Suction, Skirts, Compensation, Ship motion.

Advanced aircraft/ship interface concepts are needed to improve air operations aboard existing and future small air capable ships. This study is a synthesis and evaluation of air bearing/suction hold-down device concepts for automatically securing vertical landing aircraft to moving ship decks during launch, recovery and traversing operations. Specifically, the feasibility of conceptual hold-down devices is analyzed based on system installation factors (size, weight and power), performance and development risk. The analysis resulted in a recommendation for further evaluation of a base line rigid skirt hold-down system. (Author)

AD-A065 170/3GA PC **A03**/MF **A01**
San Diego Aircraft Engineering, Inc., CA.
Task Report on a One-Half Scale Laboratory Model of a Rigid-Hold-Down Skirt System.
Interim rept.,
P. Sorensen. 1 May 78, 32p SAE-78-016, NADC-79026-20
Contract N62269-78-Q-5137

Descriptors: *Vertical takeoff aircraft, *Fastenings, *Flight decks, Gas bearings, Suction, Skirts, Compensation, Ship motion, Scale models, Performance tests, Stress analysis.

A description of the recommended baseline rigid skirt hold-down system was presented. This report documents the design and construction of a one-half scale laboratory model of the baseline system. This model is needed to demonstrate the hold-down concept and to evaluate system performance and development risk. Model design criteria, operating conditions, dimensioned drawings and stress analyses are included in this report. The hold down system is used on air capable ships.

AD-A065 171/1GA PC **A02**/MF **A01**
San Diego Aircraft Engineering, Inc., CA.
Test Plan for a One-Half Scale Laboratory Model of a Rigid Skirt Hold-Down System.
Interim rept.,
P. Sorensen. 29 Sep 78, 21p SAE-78-027, NADC-79027-20
Contract N62269-78-M-8646

Descriptors: *Airframes, *Skirts, *Platforms, Cylindrical bodies, Seals(Stoppers), Landing forces, Landing pads, Scale models, Test methods, Bearings, Ship decks, Vertical takeoff aircraft, Short takeoff aircraft, Leakage(Fluid), Flight decks.

This report is a proposed test plan to obtain the data needed to project and evaluate the performance of a full scale system. Key issues of the planned testing include: air bearing seal leakage rates; loss of hold-down force while traversing flight deck obstacles (tie-down fittings, door, seals, etc) and the magnitude of towing drag forces encountered during traversing. In addition to the test plan, data requirements and test equipment/apparatus requirements are addressed. The held down system is used on air capable ships.

AD-A065 179/4GA PC **A03**/MF **A01**
Pennsylvania State Univ., University Park. Applied Research Lab.
A Simplified Method for Predicting Body Temperature Distribution in the Preliminary Design of Heated Underwater Bodies.
Technical memo.
4 Jan 79, 43p Rept no. TM-79-02
Contract N00024-79-C-6043

Descriptors: *Boundary layer flow, *Temperature gradients, Boundary layer transition, Mathematical prediction, Transformations(Mathematics), Laminar flow, Flow separation, Stabilization, Computations, Underwater objects, Heating, Distribution, Thermal properties.
Identifiers: Affine transformation, Body temperature(Underwater objects).

A previous effort (AD-A053 254) in the prediction of body temperature distributions to stabilize the boundary layer flow has resulted in a methodology for doing this. Recently it was found that the number of parameters could be reduced by one by means of an affine transformation. The previous method has thus been simplified. In addition, the numerical computational method was changed to one based on Keller's box method. This has permitted greater accuracy and stability in certain computational regions. This memorandum reports on this more simple method and again presents information on laminar separation and transition.

AD-A065 463/2GA PC **A04**/MF **A01**
Daedalean Associates, Inc., Woodbine, MD.
Research and Development of a Cavitating Water Jet Cleaning System for Removing Marine Growth and Fouling from U. S. Navy Ship Hulls.
Technical rept.,
S. C. Howard, F. C. Graham, A. A. Hochrein, Jr., and A. P. Thiruvengadam. Jun 78, 61p Rept no. DAI-SCH-7759-001-TR
Contract N00014-77-C-0367
Original contains color plates: All DDC and NTIS reproductions will be in black and white.

Descriptors: *Water jets, *Ship hulls, *Antifouling coatings, Aquatic organisms, Cleaning, Cavitation, Removal, Naval vessels, Hulls(Marine), Maintenance, Underwater tools, Energy conservation, Fuel consumption, Erosion.
Identifiers: *Concaver cleaning technique.

At present, the majority of underwater cleaning operations are performed with various types of rotary brushes. Although brush cleaning is readily available for immediate use by the U. S. Navy, more advanced techniques are needed so that the removal of marine growth may be accomplished with minimum time and interruption to other ship mission activities. A relatively simple technique is needed in order to remove light fouling from ship hulls more frequently, as compared to removal of heavy fouling infrequently, through the use of complex equipment. With these objectives in mind the Office of Naval Research (ONR), Code 221, has conducted an initial research and development program to prove the feasibility of utilizing cavitation for hull cleaning and ocean platform cleaning applications. With this technique, water is pumped under pressure through a nozzle of a properly designed system. The high speed jet emerging from the nozzle produces cavitation bubbles which collapse on the surface to be cleaned. The basic principle involved in the cavitation cleaning technique is discussed in Appendix A.

PB-292 617/8GA PC **A03**/MF **A01**
Oregon State Univ., Corvallis. Dept. of Agricultural Engineering.
Trawl Cable Corrosion.
Sea grant coll. program,
Robert D. Malloch, and Edward R. Kolbe. Nov 78, 31p ORESU-T-78-005, NOAA-79012906
Also pub. as Oregon State Univ., Corvallis. Agricultural Experiment Station, Special rept. no. 520.

Descriptors: *Towing cables, *Corrosion, Wire rope, Fishing, Nets, Corrosion prevention, Fishing vessels.
Identifiers: Sea Grant program.

The nature of trawl cable corrosion on Oregon coastal trawlers was analyzed to evaluate the feasibility of corrosion control. The analysis leads to a detailed discussion of possible future experiments designed to accurately determine the amount and type of protection needed. A discussion of wire rope and general corrosion principles is also provided. It was found that used wire rope is significantly lighter, has a significantly smaller wire diameter and has a significantly reduced breaking strength than new wire rope; and trawl cable attached to base steel trawl doors shows all of those effects of a significantly greater extent near metal doors than 10 fathoms away. These results lead to the hypothesis that galvanic corrosion decreases the trawl cable life and in particular, that trawl cable galvanically protects metal trawl doors. It is suggested that sacrificial metal protection and/or electrical isolation between trawl cable and metal doors will most likely protect the cable, and a series of experiments to determine accurately the need and usefulness for each type of protection is proposed.

PB-293 062/6GA PC **A10**/MF **A01**
National Maritime Research Center-Kings Point, NY. Computer Aided Operations Research Facility.
Proceedings CAORF Symposium (2nd)- The Impact of Simulation on Today's Maritime Problems, Held on September 28-29, 1978.
Sep 78, 209p
See also report dated Jun 77, PB-268 821. Sponsored in part by Maritime Administration, Washington, DC.

Descriptors: *Marine transportation, *Computerized simulation, *Meetings, Marine terminals, Liquefied natural gas, Risk, Regulations, Collision avoidance, Traffic control, Radar, Education, Operations research, Surface navigation, Performance evaluation, Simulators, Computer aided instruction, Assessments.
Identifiers: Computer aided operations research facility.

Contents:
Assessment of maritime risk of LNG terminals;
Examination of the effect of changes to the International Rules of the Road;
Development of a marine radar interrogator/transponder system;
Research into training and certification;
Analysis of computerized collision assessment systems' benefits;
Investigations into aids to navigation;
Looking ahead at CAORF.

PB-293 237/4GA PC **A03**/MF **A01**
National Transportation Safety Board, Washington, DC. Bureau of Accident Investigation.
Marine Accident Report - U. S. Tankship SS MARINE FLORIDIAN Collision with Benjamin Harrison Memorial Bridge, Hopewell, Virginia, February 24, 1977.
26 Jan 78, 49p NTSB-MAR-78-1

Descriptors: *Tanker ships, *Accident investigations, James River, Highway bridges, Marine propulsion, Steering gear, Failure, Collisions, Maintenance, Virginia.
Identifiers: *Ship accidents, Marine Floridan vessel, Hopewell(Virginia), Benjamin Harrison Memorial Bridge.

On February 24, 1977, the SS MARINE FLORIDIAN was downbound on the James River about 2 miles below Hopewell, Virginia. About 500 yards from the Benjamin Harrison highway bridge, the vessel's steering system malfunctioned and the vessel veered to the left of the channel and the raised center span on the bridge, and collided with the northern tower span. The northern end of the span dropped across the main deck just forward of the aft-located deckhouse. On March 6, 1977, the span, including the northern main tower of the bridge collapsed onto the vessel and into the river. Total damage to the bridge and the vessel was estimated to be $8,500,000. The National Transportation Safety Board determines that the probable cause of the accident was inadequate maintenance and inspection of a manual transfer switch in the electrical circuit which opened by the force of gravity and thus interrupted electric power to the steering motor when the vessel was in a position from which it could not be stopped or steering gear power restored before it collided with the bridge. Contributing to the cause of the collision was the operation of the vessel at a speed higher than necessary for a safe passage through the bridge opening, failure of the steering alarm to function, and the absence of a person on watch in the steering engineroom which contributed to the delay in activating the alternate steering engine.

PB-293 268/9GA PC **A03**/MF **A01**
National Transportation Safety Board, Washington, DC. Bureau of Accident Investigation.
Marine Accident Report - Liberian Tankship SS SANSINENA Explosion and Fire, Union Oil Terminal, Berth 46, Los Angeles Harbor, California, December 17, 1976.
27 Jul 78, 36p NTSB-MAR-78-6

Descriptors: *Tanker ships, *Accident investigations, Explosions, Fires, Crude oil, Gases, Ignition, Venting, Damage, Casualties, California, Oil pollution.
Identifiers: *Ship accidents, Sansinena vessel, Los Angeles Harbor.

About 1938 P.s.t., on December 17, 1976, the tankship SS SANSINENA, while pumping seawater ballast into its cargo tanks at the Union Oil Terminal, Berth 46, Los Angeles Harbor, California, exploded, burned and sank. The SANSINENA was destroyed. Eight crewmembers were killed; a security guard was listed as missing and presumed dead. The total losses included damage to about 260 other vessels, mostly pleasure craft, and damage to residences and commercial structures ashore, some of which were more than 3 miles from Berth 46. Berth 46 could not be used for more than 16 months. The National Transportation Safety Board determines that the probable cause of the explosion aboard the SS SANSINENA was the ignition by an undetermined source of flammable gases which accumulated above the cargo tanks and the propagation of the resulting fire into a cargo tank through either an opening in the

cargo tank's vent pipe system or its uncovered ullage opening. Most of the petroleum vapor-concentrated gases, which were being displaced by pumping seawater ballast into cargo tanks, were being vented through the ullage openings too near to the main deck and at venting velocities too low to prevent flammable gases from accumulating near the deck and at a time when the wind speed was too low to adequately disperse the cargo tank gases.

PB-293 332/3GA PC **A02**/MF **A01**
Hydronautics, Inc., Laurel, MD.
Technical Requirements for High Powered Single Screw Propulsion of Merchant Ships - Executive Summary.
Technical rept.,
R. Atlas, P. Y. Chang, D. P. Roseman, J. O. Scherer, and C. A. Tomassoni. Jan 79, 23p* TR-7811-3, MA-RD-940-79032A
Contract MA-7-38023

Descriptors: *Merchant ships, *Marine surface propulsion, Ship hulls, Marine propellers, Vibration, Bearings, Research management.

This report describes the work done in assessing the technical requirements for high powered single screw propulsion of merchant ships. A literature search and personal interviews were conducted to ascertain the maximum power currently in use in single screw ships, the availability of high power components for ships, and problems encountered in service. The collected data were analyzed, possible problem areas identified, the state of the art was determined, research requirements are identified and a research and development program is presented which, if carried out, will permit the design and construction of single screw ships of continuously increasing power.

PB-293 368/7GA PC **A02**/MF **A01**
Rosenblatt (M.) and Son, Inc., New York.
Development of a Standardized U.S. Flag Dry-Bulk Carrier. Phase 1 Executive Summary.
Final rept.,
A. Baki, R. T. Walsh, R. H. Manko Levite, P. J. Rowbotham, and D. Stonebridge. Jan 79, 14p
5303-ES, MA-RD-940-79033
Contract MA-7-38053
See also Phase 1 Final Report, PB-293 369. Prepared in cooperation with Drewry (H. P.) Ltd., London (England).
Also available in set of 7 reports PC E19, PB-293 367-SET.

Descriptors: *Marine transportation, *Cargo ships, Requirements, Design, Market research, Foreign countries, Common carriers, Standardization, Projections, Bulk cargo, Merchant vessels, Planning, Shipbuilding, Competition, Cost estimates.
Identifiers: Bulk carriers, *Dry bulk carriers.

The report presents the findings of the first phase of a study to develop a standardized U.S. flag dry bulk carrier. The objective of this study was to develop the requirements and establish the factors needed for long range competitiveness of the ships found to be the most suitable for serving the dry bulk trades of the U.S. The effort to meet this objective included the identification of markets for U.S. dry bulk exports and imports through the turn of the century, the development of projections of the demand for U.S. flag ships, the identification of the characteristics of a series of standardized designs to meet the projected demand for both the near and far term, the selection of the ship types most likely to be built in the U.S., and the identification of existing foreign designs that are most suitable for U.S. production and operation.

PB-293 369/5GA PC **A10**/MF **A01**
Rosenblatt (M.) and Son, Inc., New York.
Development of a Standardized U.S. Flag Dry-Bulk Carrier. Phase 1 Final Report,
A. Baki, R. T. Walsh, R. H. Manko Levite, P. J. Rowbotham, and D. Stonebridge. Jan 79, 207p
5303-FR, MA-RD-940-79034
Contract MA-7-38053
See also Phase 1 Executive Summary, PB-293 368, and Appendix A, PB-293 270. Prepared in cooperation with Drewry (H. P.) Ltd., London (England).
Also available in set of 7 reports PC E19, PB-293 367-SET.

Descriptors: *Marine transportation, *Cargo ships, Requirements, Design, Market research, Foreign countries, Common carriers, Standardization, Projections, Bulk cargo, Merchant vessels, Planning, Shipbuilding, Competition, Cost estimates.
Identifiers: Bulk carriers, *Dry bulk carriers.

Contents:
Examination of the dry-bulk marketplace;
Identification of design alternatives;
Evaluation of designs for U.S. flag service;
Newbuilding costs of dry-bulk carriers.

PB-293 370/3GA PC **A21**/MF **A01**
Rosenblatt (M.) and Son, Inc., New York.
Development of a Standardized U.S. Flag Dry-Bulk Carrier. Appendix A. Identification of Dry Bulk Commodities and Trades.
Final rept.,
A. Baki, R. T. Walsh, R. H. Manko Levite, P. J. Rowbotham, and D. Stonebridge. Jan 79, 485p
5303-A, MA-RD-940-79035
Contract MA-7-38053
See also Phase 1 Final Report, PB-293 369, and Appendix B, PB-293 371. Prepared in cooperation with Drewry (H. P.) Ltd., London (England).
Also available in set of 7 reports PC E19, PB-293 367-SET.

Descriptors: *Marine transportation, *Cargo ships, Requirements, Design, Market research, Foreign countries, Common carriers, Standardization, Projections, Agricultural products, Metals, Minerals, International trade, Bulk cargo, Merchant vessels, Planning, Shipbuilding, Competition, Cost estimates, Ports.
Identifiers: Bulk carriers, *Dry bulk carriers.

Contents:
The development of world dry bulk trade--1965-75;
The development of dry bulk transportation 1965-75;
The participation of the United States in world seaborne trade in dry bulk commodities;
The structure, or pattern, of US seaborne trade in dry bulk commodities;
The role of US ports shipping or receiving dry bulk commodities;
The development of world and US trade in principal dry bulk commodities;
A forecast of the development of US dry bulk trade--1975-2000;
A forecast of dry bulk trade to and from US ports--1975-2000.

PB-293 371/1GA PC **A04**/MF **A01**
Rosenblatt (M.) and Son, Inc., New York.
Development of a Standardized U.S. Flag Dry-Bulk Carrier. Appendix B. Zone-to-Zone Traffic Flow U.S. Dry-Bulk Trades: 1974-1977.
Final rept.,
A. Baki, R. T. Walsh, R. H. Manko Levite, P. J. Rowbotham, and D. Stonebridge. Jan 79, 57p
5303-B, MA-RD-79036
Contract MA-7-38053
See also Appendix A, PB-293 370, and Appendix C, PB-293 372. Prepared in cooperation with Drewry (H. P.) Ltd., London (England).
Also available in set of 7 reports PC E19, PB-293 367-SET.

Descriptors: *Marine transportation, *Cargo ships, Requirements, Design, Market research, Foreign countries, Common carriers, Standardization, Projections, Imports, Exports, Commerce, Bulk cargo, Merchant vessels, Planning, Shipbuilding, Competition, Cost estimates.
Identifiers: Bulk carriers, *Dry bulk carriers.

As an extension of the U.S. dry bulk market analysis described in Appendix A, data describing zone-to-zone and port-to-port movements were examined. These data were compiled with the assistance of the Maritime Administration from U.S. Census Bureau reports of port arrivals and departures for the period January 1974 through September 1977. The Zone-to-Zone Traffic Flow data is based upon commodity movements between the nine U.S. Coastal Districts and some 19 foreign zones. The directions of transit, in-bound (imports) or out-bound (exports), were individually examined for each of the commodities and zones. Breakdowns by type of service, tanker, liner or tramp were examined and charted to identify annual shifts in the fleet composition for a particular commodity. The tables presented herein of commodities, direction, and type of service represent those zone-to-zone movements where 500,000 deadweight tons or more were moved in one or more of the years under review. Port-to-port movements representing a further breakdown of the Zone-to-Zone Traffic Flows, identifying U.S. and foreign port pairs involved in movements of 50,000 or more deadweight tons per year were investigated. These were structured by commodity, direction of movement, type of service, U.S. Coastal District, U.S. port, foreign zone, and foreign port.

PB-293 372/9GA PC **A13**/MF **A01**
Rosenblatt (M.) and Son, Inc., New York.
Development of a Standardized U.S. Flag Dry-Bulk Carrier. Appendix C. An Analysis of the Competitive Environment in the Bulk Shipping Industry.
Final rept.,
A. Baki, R. T. Walsh, R. H. Manko Levite, P. J. Rowbotham, and D. Stonebridge. Jan 79, 289p
5303-C, MA-RD-940-79037
Contract MA-7-38053
See also Appendix B, PB-293 371, and Appendix D, PB-293 373. Prepared in cooperation with Drewry (H. P.) Ltd., London (England).
Also available in set of 7 reports PC E19, PB-293 367-SET.

Descriptors: *Marine transportation, *Cargo ships, Requirements, Design, Market research, Foreign countries, Common carriers, Standardization, Projections, Commerce, Fleets, Cargo transportation, Common carriers, Bulk cargo, Merchant vessels, Planning, Shipbuilding, Competition, Cost estimates.
Identifiers: Bulk carriers, *Dry bulk carriers, Shipping industry.

Contents:
The growth of the world bulk carrier fleet;
The growth of the world combined carrier fleet;
Composition of the existing world and US bulk carrier fleets;
The future world bulk carrier and combined carrier fleets;
Forecast world bulk shipping requirements, 1975-2000;
Forecast bulk shipping requirement generated by US dry bulk trade;
Future participation of US-flag dry bulk shipping in US and world dry bulk trade;
The trading environment for US-flag dry bulk shipping;
The economics of US-flag dry bulk shipping and an assessment of the costs of owning and operating foreign-flag vessels.

PB-293 373/7GA PC **A09**/MF **A01**
Rosenblatt (M.) and Son, Inc., New York.
Development of a Standardized U.S. Flag Dry-Bulk Carrier. Appendix D. Identification of Design Alternatives.
Final rept.,
A. Baki, R. T. Walsh, R. H. Manko Levite, P. J. Rowbotham, and D. Stonebridge. Jan 79, 182p
5303-D, MA-RD-940-79038
Contract MA-7-38053
See also Appendix C, PB-293 372, and Appendix E, PB-293 374. Prepared in cooperation with Drewry (H. P.) Ltd., London (England).
Also available in set of 7 reports PC E19, PB-293 367-SET.

Descriptors: *Cargo ships, Marine transportation, Requirements, Design, Market research, Foreign countries, Common carriers, Standardization, Projections, Bulk cargo, Merchant vessels, Planning, Shipbuilding, Competition, Cost estimates.
Identifiers: Bulk carriers, *Dry bulk carriers.

Contents:
Standard bulk carrier designs;
Standard bulk carrier designs - dimensional analysis;
Cost and price of bulk carrier newbuildings 1970-85;
Estimating bulk carrier displacements, weights and capacities;

Additional standard bulk carrier designs; Employment of standardized dry bulk carriers 1977.

PB-293 374/5GA PC **A07/MF A01**
Rosenblatt (M.) and Son, Inc., New York.
Development of a Standardized U.S. Flag Dry-Bulk Carrier. Appendix E. Design Selection.
Final rept.,
A. Baki, R. T. Walsh, R. H. Manko Levite, P. J. Rowbotham, and D. Stonebridge. Jan 79, 148p 5303-E, MA-RD-940-79039
Contract MA-7-38053
See also Appendix D, PB-293 373. Prepared in cooperation with Drewry (H. P.) Ltd., London (England).
Also available in set of 7 reports PC E19, PB-293 367-SET.

Descriptors: *Cargo ships, Marine transportation, Requirements, Design, Market research, Foreign countries, Common carriers, Standardization, Projections, Bulk cargo, Merchant vessels, Planning, Shipbuilding, Competition, Cost estimates, Specifications.
Identifiers: Bulk carriers, *Dry bulk carriers.

The major thrust of the first phase of this study to develop a standardized U.S. flag dry-bulk carrier was to identify existing foreign designs that would be most suitable to meet the short-term demand for U.S. flag ships. In order to accomplish this, the study team sought to predict the demand for ships based on projected commodity flows, collected information for 89 different designs offered by shipyards worldwide, and developed a set of preliminary performance criteria for vessels most disirable for U.S. service. This information was synthesized, and resulted in the development of an evaluation procedure which would lead to the identification of those designs that were considered to best meet U.S. needs. Three classes of dry-bulk carrier were selected. A small sized bulk carrier, between 15,000 and 25,000 dwt, capable of trading in the Great Lakes was specified. This ship should have on-board cargo gear, be diesel propelled (preferably a medium speed engine), and have sufficient power to trade at about 15 knots. A medium sized bulk carrier, between 35,000 and 40,000 dwt, will also be required. This vessel is constrained by the draft limit of a number of ports. It should be diesel propelled at around 15 knots and should also have cargo handling gear installed. The third class of bulk carrier identified is a Panamax size ship, greater than 55,000 dwt. It will be developed without cargo gear, but will also be diesel propelled. All of these ships must be versatile enough to trade in a variety of commodities. The report summarizes the principal preliminary performance specifications identified for U.S. standardized vessels.

PB-293 461/0GA PC **A03/MF A01**
National Transportation Safety Board, Washington, DC. Bureau of Accident Investigation.
Marine Accident Report - Collision of Argentine Freighter M/V SANTA CRUZ II and U.S. Coast Guard Cutter CUYAHOGA in Chesapeake Bay at the Mouth of the Potomac River, Maryland, October 20, 1978.
26 Feb 79, 49p NTSB-MAR-79-3

Descriptors: *Patrol ships, *Cargo ships, *Accident investigations, Collisions, Chesapeake Bay, Potomac River, Casualties, Damage, Coast Guard, Maryland.
Identifiers: Santa Cruz 2 vessel, Cuyahoga vessel, Coast Guard ships.

At 2107 e.d.t. on October 20, 1978, the Argentine freighter M/V SANTA CRUZ II and the U.S. Coast Guard Cutter CUYAHOGA collided in the Chesapeake Bay at the mouth of the Potomac River, Maryland. As a result of the collision, the CUYAHOGA sank. Eleven Coast Guardsmen were killed; 18 Coast Guardsmen were rescued by the SANTA CRUZ II which experienced minor damage. The National Transportation Safety Board determines that the probable cause of this accident was the left turn executed by the CUYAHOGA, while in proximity to the SANTA CRUZ II, contrary to the Rules of the Road as the vessels were meeting head and head, the failure of the Commanding Officer of the CUYAHOGA to determine the relative motion, course, speed, or closest point of approach of the SANTA CRUZ II, and the failure of the CUYAHOGA to initiate bridge-to-bridge communications by radiotelephone to exchange navigational information. Contributing to the loss of life was the lack of emergency lighting aboard the CUYAHOGA.

PB-293 884/3GA PC **A16/MF A01**
Hydronautics, Inc., Laurel, MD.
Technical Requirements for High Powered Single Screw Propulsion of Merchant Ships. Volume 2,
R. Atlas, P. Y. Chang, D. P. Roseman, J. O. Scherer, and C. A. Tomassoni. Jan 79, 351p TR-7811-3-VOL-2, MA-RD-940-79032B
Contract MA-7-38023
See also PB-293 332.

Descriptors: *Merchant ships, *Marine surface propulsion, Hydrodynamics, Marine propellers, Ship hulls, Vibration, Propeller shafts, Bearings, Seals(Stoppers), Cavitation, Design criteria.
Identifiers: Single screw ships.

This report describes the work done in assessing the technical requirements for high powered single screw propulsion of merchant ships. A literature search and personal interviews were conducted to ascertain the maximum power currently in use in single screw ships, the availability of high power components for ships, and problems encountered in service. A complete bibliography is included. The collected data was analyzed, possible problem areas identified, the state-of-the-art was determined, research requirements are identified and a research and development program is presented which, if carried out, will permit the design and construction of single screw ships of continuously increasing power.

PB-294 236/5GA PC **A14/MF A01**
Marine Equipment Leasing, Inc., Falls Church, VA.
Technology Survey of Major U.S. Shipyards, 1978.
Final rept.,
Robert Lowry, and William L. Stevens. Jan 79, 319p* MA-RD-920-79041
Contract DO-ADI-78-00-3037

Descriptors: *Shipyards, *Technology assessment, Shipbuilding, Management analysis, Production methods, Construction management, Foreign government, United States, Analysis of variance.

This is a report on a technology survey of 13 major U.S. shipyards and 16 of the best comparable foreign shipyards. A standard procedure is followed in assigning one of four technology levels to a broad range of shipbuilding operations and processes in each shipyard. The results are presented in terms of comparisons among U.S. shipyards and between U.S. and foreign shipyards.

13K. Pumps, Filters, Pipes, Fittings, Tubing and Valves

AD-A065 041/6GA PC **A04/MF A01**
Army Medical Bioengineering Research and Development Lab., Fort Detrick, MD.
Phosphorus Removal in a Pilot Scale Trickling Filter System by Low Level Lime Addition to Raw Wastewater.
Final rept. Jan 76-Jul 77,
Roy D. Miller, Robert S. Ryczak, and Arnold Ostrofsky. Jan 78, 59p Rept no. USAMBRDL-TR-7901

Descriptors: *Water reclamation, Filtration, *Phosphorus, Waste water, Wastes(Industrial), Coagulation, Removal, Water treatment.
Identifiers: Lime, *Water pollution control, *Trickling filtration, Biochemical oxygen demand.

Lime addition to raw wastewater as an upgrading technique can significantly aid a trickling filter plant in producing effluents in compliance with NPDES permit limitations for BOD5, suspended solids and phosphorus. Low level lime addition does not require recarbonation and does not produce the sludges typical of high pH lime treatment schemes. Low level lime addition was studied in laboratory and pilot scale systems. Raw wastewater was treated in a 4.16 cu m/day (1100 gpd) primary clarifier followed by a 2.46 cu m/day (650 gpd) trickling filter system. Lime was added to a rapid mix tank prior to primary clarification at pH levels of 9.0, 9.5 and 9.8 entering the clarifier. Phosphorus precipitation, solid-liquid separation of the insolubilized phosphorus, nutrient levels entering the trickling filter, biological treatment efficiency, sludge production and sludge characteristics were all monitored. Ferric chloride and polyelectrolytes were tested for their effectiveness as flocculating aids in the solid-liquid separation of the insolubilized phosphorus. Results indicate that low level lime addition to raw wastewater in a trickling filter system can provide an effective simple-to-operate, cost-effective method of upgrading a plant to successfully comply with effluent limitations. (Author)

AD-A065 235/4GA PC **A08/MF A01**
Transportation Systems Center, Cambridge, MA.
Identification and Evaluation of Deepwater Port Hose Inspection Methods.
Final rept. Aug 76-Mar 78,
W. T. Hathaway, L. Frenkel, G. R. Plank, and S. N. Bobo. Jan 79, 155p TSC-USCG-79-10, USCG-D-02-79

Descriptors: *Fuel hoses, Inspection, Test methods, Deep water, Crude oil, Offshore structures, Failure, Defects(Materials), Oceanographic data, Underwater acoustics, Infrared equipment, Leakage(Fluid).
Identifiers: Deepwater ports.

The work contained in this report consists of a review of deepwater port hose failures to date, and the causes leading to these failures, as well as an evaluation of current hose inspection techniques and procedures, and an examination of available non-destructive test procedures which are not currently used on deepwater port hoses but show potential in this application. Inspection methods which appear to show potential for immediate application are x-ray inspection for hose component placement, durometer testing for liner hardness, and pressure-volume testing for overall structural characteristics. Those methods judged to require more experimental investigation, both in the laboratory and the field, are ultrasonic inspection and acoustic emission inspection. Included in the report are the results of laboratory tests with acoustic emission, ultrasonic, and durometer techniques and recommendations for further work utilizing these techniques. (Author)

PB-293 551/8GA PC **A09/MF A01**
GCA Corp., Bedford, MA. GCA Technology Div.
Fabric Filter Model Format Change; Volume 1. Detailed Technical Report.
Final rept. Nov 77-Dec 78,
Richard Dennis, and Hans A. Klemm. Feb 79, 181p* GCA-TR-78-51-G(2), EPA/600/7-79/043A
Contract EPA-68-02-2607
Portions of this document are not fully legible.

Descriptors: *Air pollution control equipment, *Mathematical models, Air filters, Combustion products, Industrial wastes, Fly ash, Particles, Design criteria, Computer programming, Performance evaluation, Glass fibers, Cleaning, Concentration(Composition), Physical properties, Dust collectors.
Identifiers: *Fabric filters, Baghouses.

The report describes an improved mathematical model for use by control personnel to determine the adequacy of existing or proposed filter systems designed to minimize coal fly ash emissions. Several time-saving steps have been introduced to facilitate model application by Agency and other groups. To further aid the model user, the study is in two volumes: a detailed technical report and a user's guide. By using selected combustion, operating, and design parameters, the model user can forecast the expected emissions and filter pressure loss. The program affords the option of providing readily appraised summary performance statistics or highly detailed results. Several built-in error checks prevent the generation of useless data and avoid unnecessary computer time. The model takes into account the concentration and physical properties of the dust, air/cloth ratio, sequential compartmentized operation, and the method, intensity, and frequency of cleaning. The model function depends on the unique fabric cleaning and dust penetration properties observed with several coal fly ashes (including lignite) and woven glass fabrics.

13L. Safety Engineering

PB-292 978/4GA PC **A02**/MF **A01**
National Engineering Lab. (NBS), Boulder, CO. Thermophysical Properties Div.
Radio Frequency Liquid Level Gauging in Propane Tank Car Safety Tests - A Feasibility Study,
J. D. Siegwarth. Jan 79, 15p NBSIR-79-1600

Descriptors: *Tank cars, *Liquid level indicators, Resonant frequency, Radio frequencies, Propane, Fire safety, Feasibility, Tests.

Selected radio frequency (rf) resonances of an empty 30,300 liter (8,000 gallon) tank car have been measured to determine whether rf can be used to gauge the propane liquid levels during tank car fire safety tests. The change of resonant frequencies of a small horizontal cylindrical tank as a function of liquid volume has been tested in order to estimate the precision to which the amount of propane in a tank car can be measured. The technique is applicable to routine tank car gauging.

PB-293 195/4GA PC **A06**/MF **A01**
Georgia Univ., Athens. Inst. of Government.
An Evaluation of the Impact of the Columbus, Georgia Alcohol Safety Action Project's Public Information and Education Countermeasures, January 1972 through December 1974. Section I.
Final rept. 1 Jun 71-30 Jun 77,
Jane M. Hudson, Edward V. Milton, Charles W. Peek, and Robert Seller. Mar 79, 111p DOT-HS-803 899
Contract DOT-HS-057-1-074
See also Section 2, Volume 1, PB-293 196.

Descriptors: *Motor vehicle accidents, *Accident prevention, Statistical data, Project management, Publicity, Traffic safety, Law enforcement, Education, Rehabilitation, Georgia.
Identifiers: *Alcohol safety action projects, Drinking drivers, Columbus(Georgia), Muscogee County(Georgia), Human factors, Alcohol related crashes.

The Columbus, Georgia Alcohol Safety Action Project (ASAP) became operational in January 1972 and continued for a three year period. Two additional years of data collection were funded through NHTSA. The ASAP area included Columbus/Muscogee County, Georgia. Richmond County, Georgia was used as a control/comparison area in measuring the extent to which Columbus ASAP achieved its primary objectives: to decrease the number and proportion of DWI crashes. The Project reported that when data from Richmond are compared with data from Muscogee, it is clear that Columbus ASAP attained its first objective by producing a significant decrease in both the number and proportion of DUI crashes during 1972-1974. While DUI crashes significantly increased in Richmond during these two years, Muscogee DUI crashes were significantly reduced. This reduction seems directly attributable to the presence of Columbus ASAP in Muscogee, since the effects of all other confounding forces but one could be ruled out through the use of Richmond as a control area. One intriguing way in which Columbus ASAP generated this decrease may have been through its impact on the general driving public. Significantly fewer multi-vehicle DUI crashes during the 5:00 p.m. to 3:00 a.m. time period in 1972-1974 indicated increased cautiousness on the part of non-intoxicated drivers toward drivers suspected of intoxication. Thus, the general driving public was apparently attentive to Enforcement and PIE Countermeasures aimed more at the target group of intoxicated drivers, at least attentive enough to define this time period as one of peak threat to them from intoxicated drivers and thus a period in which they were more on the lookout for such drivers.

PB-293 196/2GA PC **A05**/MF **A01**
Georgia Univ., Athens. Inst. of Government.
An Analysis of Ultimate Performance Measures to Determine Total Project Impact in Columbus, Georgia from January 1972-December 1974. Section II, Volume I.
Final rept. 1 Jun 71-30 Jun 77,
Charles W. Peek, Jane M. Hudson, Edward V. Milton, and Robert Seller. Mar 79, 80p
ANALYTIC STUDY-1, DOT-HS-803 900
Contract DOT-HS-057-1-074
See also Section 1, PB-293 195 and Section 2, Volume 3, PB-293 197.

Descriptors: *Motor vehicle accidents, *Accident prevention, Statistical data, Project management, Publicity, Traffic safety, Law enforcement, Education, Rehabilitation, Georgia.
Identifiers: *Alcohol safety action projects, Drinking drivers, Columbus(Georgia), Muscogee County(Georgia), Human factors, Alcohol related crashes.

The report follows the five project objectives identified in the Detailed Operational Plan. Section I considers the impact of potentially confounding non-ASAP community forces on them. It also describes the basic time periods to be used in the analyses that follow. Section II explores the two objectives that deal with decreasing alcohol-related crashes and the deaths, injuries and property damage that result from these crashes. Data from the state of Georgia accident records pertaining to both Muscogee County and the control county of Richmond is used to assess the extent to which these two objectives have been accomplished. Section III focuses on the two project objectives concerned with decreasing intoxicated driving in Columbus/Muscogee. The final project objective-the effort to increase public support for successful ASAP programs-is investigated in Section IV, using four years of house hold survey data. Section V contains a summary of the major findings and conclusions.

PB-293 197/0GA PC **A04**/MF **A01**
Georgia Univ., Athens. Inst. of Government.
An Analysis of ASAP (Alcohol Safety Action Project) Activity in Columbus, Georgia from January 1972-December 1974. Section II, Volume 3.
Final rept. 1 Jun 71-30 Jun 77,
Charles W. Peeks, Jane M. Hudson, Edward V. Milton, and Robert Seller. Mar 79, 63p
ANALYTIC STUDY-3, DOT-HS-803 901
Contract DOT-HS-057-1-074
See also Section 2, Volume 1, PB-293 196 and Section 2, Volume 4, PB-293 198.

Descriptors: *Motor vehicle accidents, *Accident prevention, Statistical data, Project management, Publicity, Traffic safety, Law enforcement, Education, Rehabilitation, Police, Georgia.
Identifiers: *Alcohol safety action projects, Drinking drivers, Columbus(Georgia), Muscogee County(Georgia), Human factors, Alcohol related crashes.

The report examines the degree to which the five objectives of deploying ASAP police patrols set forth in Columbus ASAP's Detailed Operational Plan have been accomplished, and also considers the catalytic impact of the Enforcement Countermeasure Activity Area. As a backdrop against which to assess attainment of these objectives, it provides a description of how the ASAP patrol unit operated. It also considers the effects of some non-ASAP forces on the achievement of these objectives.

PB-293 198/8GA PC **A06**/MF **A01**
Georgia Univ., Athens. Inst. of Government.
An Analysis of the Impact of ASAP (Alcohol Safety Action Project) on the Traffic Safety System in Columbus, Georgia from January 1972 - December 1974. Section II, Volume 4.
Final rept. 1 Jun 71-30 Jun 77,
Charles W. Peek, Jane M. Hudson, Edward V. Milton, and Robert Seller. Mar 79, 109p
ANALYTIC STUDY-4, DOT-HS-803 902
Contract DOT-HS-057-1-074
See also Section 2, Volume 3, PB-293 197 and Section 2, Volume 5, PB-293 199.

Descriptors: *Motor vehicle accidents, *Accident prevention, Statistical data, Project management, Publicity, Traffic safety, Law enforcement, Education, Rehabilitation, Georgia.
Identifiers: *Alcohol safety action projects, Drinking drivers, Columbus(Georgia), Muscogee County(Georgia), Human factors, Alcohol related crashes, Court systems.

The report provides a detailed description of the court system of Columbus-Muscogee county. The various aspects of the court system are considered in eight chapters. In addition to other means both population data and client information samples are used to help provide this description. Also a large and varied number of distributions are considered in order to convey a clear understanding of the operations and processes of the court system.

PB-293 199/6GA PC **A04**/MF **A01**
Georgia Univ., Athens. Inst. of Government.
An Analysis of Drinker Diagnosis and Referral Activity in Columbus, Georgia from January 1972 - December 1974. Section II, Volume 5.
Final rept. 1 Jun 71-30 Jun 77,
Charles W. Peek, Jane M. Hudson, Edward V. Milton, and Robert Seller. Mar 79, 59p
ANALYTIC STUDY-5, DOT-HS-803 903
Contract DOT-HS-057-1-074
See also Section 2, Volume 4, PB-293 198 and Section 2, Volume 6, PB-293 200.

Descriptors: *Motor vehicle accidents, *Accident prevention, Statistical data, Project management, Publicity, Traffic safety, Law enforcement, Education, Rehabilitation, Georgia.
Identifiers: *Alcohol safety action projects, Drinking drivers, Columbus(Georgia), Muscogee County(Georgia), Human factors, Alcohol related crashes, Court systems.

The report describes the judicial/education and rehabilitation system of Columbus-Muscogee County and its relationship to referral and diagnosis activity. The disposition of DUI cases in Recorder's and State Courts are also described as they concern the use of education and treatment sentencing alternatives (referrals). The classification scheme developed and implemented by ASAP in Columbus-Muscogee County is described. The treatment and rehabilitation modalities, developed by ASAP and those which existed prior to ASAP are considered as well. Various distributions by drinking driver classification and other variables by referrals, are described and the implications of these distributions are considered.

PB-293 200/2GA PC **A04**/MF **A01**
Georgia Univ., Athens. Inst. of Government.
An Analysis of Alcohol Rehabilitation Efforts in Columbus, Georgia from January 1972 - December 1974. Section II, Volume 6.
Final rept. 1 Jun 71-30 Jun 77,
Charles W. Peek, Jane M. Hudson, Edward V. Milton, and Robert Seller. Mar 79, 63p
ANALYTIC STUDY-6, DOT-HS-803 904
Contract DOT-HS-057-1-074
See also Section 2, Volume 5, PB-293 199 and Section 3, PB-293 201.

Descriptors: *Motor vehicle accidents, *Accident prevention, Statistical data, Project management, Publicity, Traffic safety, Law enforcement, Education, Rehabilitation, Georgia.
Identifiers: *Alcohol safety action projects, Drinking drivers, Columbus(Georgia), Human factors, Alcohol related crashes, Muscogee County(Georgia).

The report provides an analysis of Phase I, II, and III and their impact with regard to recidivism and subsequent accident involvement.

PB-293 201/0GA PC **A99**/MF **A01**
Georgia Univ., Athens. Inst. of Government.
Columbus, Georgia Alcohol Safety Action Project. Appendix 'H' Tables. Section III.
Final rept. 1 Jun 71-30 Jun 77,
Charles W. Peek, Jane M. Hudson, Edward V. Milton, and Robert Seller. Mar 79, 727p DOT-HS-803 912
Contract DOT-HS-057-1-074
See also Section 2, Volume 6, PB-293 200 and Section 4, Volume 1, PB-293 202.

Descriptors: *Motor vehicle accidents, *Accident prevention, Statistical data, Project management, Publicity, Traffic safety, Law enforcement, Education, Rehabilitation, Georgia.
Identifiers: *Alcohol safety action projects, Drinking drivers, Columbus(Georgia), Muscogee County(Georgia), Human factors, Alcohol related crashes.

The primary objectives of the study were to decrease significantly the number of deaths, the number and severity of injuries, and the amount of property damage in alcohol-related crashes; and to increase significantly the degree of public support for programs with goals and activities similar to ASAP's, so that groundwork is laid for continuing the more successful programs established by ASAP. The objectives were to decrease significantly both the total number of alcohol-related crashes and the proportion of the total traffic crashes which alcohol-related crashes compose; to decrease significantly the number and proportion of intoxicated drivers on the roads; and to decrease significantly the BAC levels of (a) drinking drivers (that is, those drivers whose breath sample demonstrates the presence of alcohol in their systems) involved in alcohol-related crashes, (b) drinking drivers involved in non-crash alcohol-related traffic arrests, and (c) drinking drivers in general (i.e., those who come through the roadside survey).

PB-293 202/8GA PC **A03**/MF **A01**
Georgia Univ., Athens. Inst. of Government.
A Post Project Evaluation of the Columbus Alcohol Safety Action Program. Section IV, Volume I.
Final rept. 1 Jun 71-30 Jun 77,
Charles W. Peek, Jane M. Hudson, Edward V. Milton, and Robert Seller. Mar 79, 45p DOT-HS-803 913
Contract DOT-HS-057-1-074
See also Section 3, PB-293 201 and Section 4, Volume 2, PB-293 203.

Descriptors: *Motor vehicle accidents, *Accident prevention, Statistical data, Project management, Publicity, Traffic safety, Law enforcement, Education, Rehabilitation, Georgia.
Identifiers: *Alcohol safety action projects, Drinking drivers, Columbus(Georgia), Muscogee County(Georgia), Human factors, Alcohol related crashes.

Since 1972 the Institute of Government at the University of Georgia has been actively working with the City of Columbus in evaluating the Columbus Alcohol Safety Action Program (ASAP). During the ASAP operational years, 1972-74, the Institute of Government was extensively involved in evaluating the achievement of the several ASAP countermeasures. The Institute effort was concerned with whether the ASAP project has had any residual impact, that is, have the observed achievements noted while ASAP was operational been carried over or continued now that the ASAP countermeasures have ceased to function.

PB-293 203/6GA PC **A03**/MF **A01**
Georgia Univ., Athens. Inst. of Government.
A Post Project Evaluation of the Columbus Alcohol Safety Action Program. Section IV, Volume 2.
Final rept. 1 Jun 71-30 Jun 77,
Charles W. Peek, Jane M. Hudson, Edward V. Milton, and Robert Seller. Mar 79, 42p
ANALYTIC STUDY-1-SECT-4-VOL-2, DOT-HS-803 914
Contract DOT-HS-057-1-074
See also Section 4, Volume 1, PB-293 202.

Descriptors: *Motor vehicle accidents, *Accident prevention, Statistical data, Project management, Publicity, Traffic safety, Law enforcement, Education, Rehabilitation, Georgia.
Identifiers: *Alcohol safety action projects, Drinking drivers, Columbus(Georgia), Muscogee County(Georgia), Human factors, Alcohol related crashes.

The Institute of Government at the University of Georgia is under contract to the city of Columbus to assist them in a post-operative evaluation of the city's Alcohol Safety Action Program (ASAP). During the active years of the ASAP project the Institute of Government had also served the city of Columbus as project evaluator. This report contains the findings and analysis for the second year of the post project period.

PB-293 273/9GA PC **A06**/MF **A01**
Midwest Research Inst., Kansas City, MO.
Kansas City ASAP (Alcohol Safety Action Project). Section I. Analytic Study 1: An Analysis of Project Impact on Ultimate Performance Measures.
Final rept.,
William D. Glauz, and Michael C. Sharp. Mar 79, 124p 3560-D(1), DOT-HS-803 967
Contract DOT-HS-077-1-100
Sponsored in part by Kansas City Alcohol Safety Action Project, MO.

Descriptors: *Motor vehicle accidents, *Accident prevention, Statistical data, Project management, Rehabilitation, Effectiveness, Traffic safety, Legislation, Missouri.
Identifiers: *Alcohol safety action projects, Drinking drivers, Alcohol related crashes, Kansas City(Missouri).

The 5-year, $3.2 million project was successful in meeting its goal and most of its subsidiary objectives. Alcohol-related crashes were significantly reduced in Kansas City, Missouri, especially during the first 4 years. Arrests more than doubled, conviction rates improved, an effective screening, identification, and referral process was implemented, and new legislation was obtained. Drunk driving in Kansas City declined greatly. Overall, the project yielded societal benefits of about $3 for each dollar spent. The major failings were the inability of the evaluation to show more than a marginal gain in rehabilitation program effectiveness over the more traditional punitive sanctions, and an inability to generate and maintain public awareness of the problems and support for the program.

PB-293 325/7GA PC **A08**/MF **A01**
Wisconsin Univ.-Madison. Statistical Lab.
Statistical Analysis of Crash Conditions and Their Relationship to Injuries.
Final rept. Jan 77-May 78,
Lawrence A. Klimko, and Keith Friedman. Jun 78, 172p DOT-HS-803 818
Contract DOT-HS-7-01559
Prepared in cooperation with Kinetic Research, Inc., Madison, WI.

Descriptors: *Collision research, *Injuries, Mathematical models, Accident investigations, Statistical analysis, Head(Anatomy), Thorax, Motor vehicle accidents.
Identifiers: Injury research, Injury severity, Accident research, Motor vehicles(1973 models), Motor vehicles(1974 models), Motor vehicles(1975 models).

Statistical models were developed relating injury probabilities in generalized body regions to crash conditions. The data available for use was the Restraint System Evaluation Program file which contains a sample of front seat occupants of 1973 through 1975 model year automobiles in 1974-1975 towaway accidents. The file had been upgraded with the inclusion of calculated crash severity parameters such as barrier equivalent velocity and various crush measures. During the analysis a number of additional crash severity parameters were formulated. A large number of statistical techniques were utilized during the course of the work including AID, cluster analysis, discriminant analysis, categorical analysis, and logistic analysis. The analyses done addressed primarily unrestrained unejected occupants in frontal and side impacts. Additionally, restrained occupants were considered to a lesser extent. Generally, the resulting models provide an injury probability description whose most significant parameter is crash severity but which also includes occupant characteristics and other parameters.

PB-293 326/5GA PC **A03**/MF **A01**
National Transportation Safety Board, Washington, DC. Bureau of Accident Investigation.
Railroad Accident Report - Head-end Collision of Louisville and Nashville Railroad Local Freight Train and Yard Train at Florence, Alabama, September 18, 1978.
22 Feb 79, 36p NTSB-RAR-79-2

Descriptors: *Railroads, *Accident investigations, Collisions, Freight cars, Cargo transportation, Railroad terminals, Liquefied petroleum gases, Alabama.
Identifiers: *Railroad accidents, Florence(Alabama), Human factors, Hazardous materials transportation.

About 10:31 a.m., c.d.t., on September 18, 1978, Louisville and Nashville Railroad local freight train Extra 542 South collided head-on with L&N yard train No. 101 on the single main track within yard limits at Florence, Alabama. Both locomotive units and one car of each train were derailed. Three train crewmembers were killed. Since an LPG tank car was derailed and oil was spilled from ruptured locomotive fuel tanks, local officials evacuated about 1,000 persons from nearby residences. Total damage was estimated to be $462,500. The National Transportation Safety Board determines that the probable cause of the accident was the failure of the engineer of Extra 542 South to operate his train at a speed that would have permitted stopping the train within one-half the available sight distance as required by L&N operating rules. Contributing to the severity of the accident was the failure of the engineer of Extra 542 South to apply his train's brakes after he was in a position to see the opposing train. Contributing to the collision was the failure of the L&N management to insure that all operating rules were being complied with, particularly those involving the operation of two trains in opposite directions on the same track.

PB-293 364/6GA PC **A13**/MF **A01**
Michigan Univ., Ann Arbor. Highway Safety Research Inst.
Drugs and Driving: A Selected Bibliography, Supplement One.
Final rept. Jul 75-Nov 76,
Kent B. Joscelyn, and Alan C. Donelson. Jan 79, 276p* UM-HSRI-78-3, DOT-HS-803 879
Contract DOT-HS-7-01530
Supplement to Report Dated Jan 77, PB-264 179.

Descriptors: *Motor vehicle operators, *Traffic safety, *Drugs, *Bibliographies, Utilization, Drug tolerance, Behavior, Accident prevention, Collision research, Abstracts.
Identifiers: Human factors.

The report presents a first supplement to Drugs and driving--A selected bibliography (HS - 802 188), a bibliography of literature dealing with the relationship between drug use (other than alcohol alone) and highway safety. This supplement both updates the parent volume and expands coverage in certain research areas related to the field of drugs and highway safety. In particular, literature pertaining to drug usage patterns and drug analytical methodology has been included. A detailed description of the literature scope and document selection process is provided. The bibliography consists of four appendices, including a Topical Index, an Author Index, a Title Index, and Abstracts of nearly 400 articles. A revised topical index was developed to improve user access to document abstracts. Within the topical index are cross-referenced lists of drugs by name and by usage.

PB-293 395/0GA PC **A06**/MF **A01**
Virginia Commonwealth Univ., Richmond. School of Social Work.
Diagnosis, Referral and Rehabilitation Within the Fairfax Alcohol Safety Action Project, 1976.
Analytical study 5/6 (Final),
David N. Saunders, and Linda J. Pemberton. Jun 77, 102p DOT-HS-803 980
Contract DOT-HS-067-1-087
Sponsored in part by Virginia Highway Safety Div., Richmond.

Descriptors: *Traffic safety, Statistical data, Rehabilitation, Evaluation, Cost effectiveness, Motor vehicle accidents, Accident prevention, Virginia.
Identifiers: *Alcohol safety action projects, Fairfax County(Virginia), Drinking drivers, Probation.

The report contains a narrative description of the Fairfax ASAP diagnosis, referral and rehabilitation systems and provides corresponding descriptive statistics for 1976. Profiles of defendants on the basis of drinker level and blood alcohol content are included on a number of demographic and alcohol related variables. These same variables are also examined on the basis of rehabilitation program completion status. The reliability of diagnostic procedures are examined as well as the con-

sistency of diagnosis within drinker level classifications. The characteristics of defendants who were returned to the court noncompliant are compared to those who complied. The cost efficiency of the diagnostic, referral, probation, follow-up and rehabilitation systems are reviewed with special emphasis on anticipated versus actual cost for these components. The probation system was found more cost efficient in 1976 than it was in 1975 because of higher levels of referrals from the court. The results of a special study are presented that compared the subsequent recidivism and crash involvement for matched groups who attended ASAP were found to have significantly better subsequent driving experience than those who did not attend.

PB-293 488/3GA PC **A08**/MF **A01**
National Transportation Safety Board, Washington, DC. Bureau of Accident Investigation.
Railroad Accident Reports - Brief Format, Issue Number 1 - 1978.
12 Feb 79, 172p NTSB-RAB-79-1

Descriptors: *Railroads, *Accidents, Collisions, Casualties, Damage, Accident investigations, Statistical data, Traffic safety.
Identifiers: *Railroad accidents, *Railroad derailments, Accident causes, Railroad highway crossings, Human factors.

The publication contains briefs of selected railroad accidents occurring in U.S. railroad operations during fiscal years 1977 and 1978. The brief format presents basic facts, conditions, circumstances, and probable cause(s) in each instance. Additional statistical information is tabulated by types of accidents, and casualties related to types of accidents, carriers involved, and causal factors.

PB-293 623/5GA PC **A04**/MF **A01**
Kansas City Alcohol Safety Action Project, MO.
Kansas City ASAP (Alcohol Safety Action Project). Section I. Analytic Study 3: An Analysis of ASAP Patrol Activity.
Final rept. Jul 71-Dec 76,
William D. Glauz. Apr 77, 70p DOT-HS-803 968
Contract DOT-HS-077-1-100
Prepared by Midwest Research Inst., Kansas City, MO. Also pub. as MRI-3560-D(3).

Descriptors: *Motor vehicle accidents, *Accident prevention, *Law enforcement, Police, Traffic safety, Statistical data, Missouri.
Identifiers: *Alcohol safety action projects, Drinking drivers, Alcohol related crashes, Kansas City(Missouri).

The study concerns activities and impacts of the police in Kansas City, Missouri, regarding enforcement of laws pertaining to drinking and driving. Arrests more than doubled as a result of ASAP. A Special Alcohol Safety Patrol (SASP), although it comprised less than 1% of the police department, accounted directly for well over half the increase and, by example, caused the rest of the department's arrests to increase. Patrol experiments aimed at increasing the apprehension of younger or more wealthy drivers were largely unsuccessful, mostly because the otherwise useful practice of 'cooperative arrests' distorted certain data records used in planning and evaluating such experiments.

13M. Structural Engineering

AD-A065 166/1GA PC **A03**/MF **A01**
Advisory Group for Aerospace Research and Development, Neuilly-sur-Seine (France).
Selection of Structural Analysis Computer Programs,
L. V. Andrew, and I. C. Taig. Jan 79, 27p Rept no. AGARD-R-670
Presented at the Structures and Materials Panel Metting (47th), Sep 78, Florence, Italy.

Descriptors: *Structural engineering, Computer aided design, Structural analysis, User needs, Reports, Conferencing(Communications), Panel(Committee), Industrial engineering, Industrial research, NATO, France, Great Britain, United States.
Identifiers: Computer applications.

The use of computerised techniques of structural analysis is now standard in many branches of engineering. There is, however, a wide range of programs available both commercially and within individual organisations. These programs differ in their capabilities and in their costs and ease of use. The potential user may experience considerable difficulty in selecting a program that is appropriate to his particular class of work. The paper by Mr. Andrew describes in detail the technical and administrative course of action that has been adopted by a major industrial organization to select and implement programs that are appropriate to its work. Mr. Taig presents a similar discussion but with perhaps more emphasis on technical issues. Papers presented at the 47th Structures and Materials Panel Meeting, Florence, Italy, September 1978. (Author)

AD-A065 403/8GA PC **A05**/MF **A01**
Underwriters' Labs., Inc., Northbrook, IL.
Fire Tests of Polyurethane Foam Roof Deck Construction on Steel Decks.
Final rept.,
Kenneth Rhodes. Dec 78, 96p CEL-CR-79.004
Contract N68305-78-C-0010

Descriptors: *Roofs, *Polyurethane Resins, *Fire safety, Foam, Expanded plastics, Sprays, Fire resistant coatings, Furnaces, Scale models, Test methods, Naval equipment, Test facilities.

Fire tests were conducted on built-up roof assemblies specified by the Navy consisting of spray-applied polyurethane foamed plastic covered with specified elastomeric coatings. The Standard UL 790 entitled 'Tests for Fire Resistance of Roof Covering Materials,' was utilized to measure the resistance to fire originating from sources outside a building on which they may be installed. As a result of these fire tests and comparisons with previous results for other assemblies, three candidate systems are eligible for Underwirters Laboratories Inc.'s Classification and Follow-Up Service as 'Fire Classified' Roof Deck Constructions.

PB-292 635/0GA PC **A07**/MF **A01**
Busby (R. Frank) Associates, Arlington, VA.
Underwater Inspection/Testing/Monitoring of Offshore Structures.
Feb 78, 147p NOAA-79013001
Contract NOAA-7-35336
Sponsored in part by Department of Energy, Washington, DC., and Department of the Interior, Washington, DC.

Descriptors: *Offshore structures, *Inspection, *Nondestructive tests, *Monitoring, Subsurface investigations, Reviews, Requirements, Assessments, Visual inspection, Magnetic particle tests, Ultrasonic tests, Corrosion tests.
Identifiers: Underwater, Acoustic emissions, State of the art.

Requirements for underwater inspection of offshore structures and the techniques and tools to conduct such inspection vary widely from country-to country. The purpose of this six month study was: (1) to identify and describe all actual or potential underwater inspection requirements (national and international) for fixed concrete and steel structures promulgated by the governments of offshore oil and gas producing countries and by the offshore operators themselves; (2) to identify and assess the state-of-the-art in underwater non-destructive testing/monitoring/inspection of offshore structures; (3) to evaluate the capability of servicing and hardware producers to meet the inspection requirements; and (4) to describe and establish priorities for specific tasks for technology development that should be undertaken to satisfy current and future requirements. While this study concentrates on fixed offshore oil and gas structures, the results also reflect the state-of-the-art in underwater inspection/testing for other offshore structures as well, e.g., floating power platforms, offshore terminals and deepwater ports.

PB-293 206/9GA PC **A03**/MF **A01**
Systems, Science and Software, La Jolla, CA.
Dynamic Response of a High-Rise Building to Theoretically Produced Earthquake Ground Motion.
Topical rept.,
Joel Sweet. Jun 73, 39p SSS-R-73-1733, NSF/RA/E-73/557

Descriptors: *Buildings, *Dynamic structural analysis, Earth movements, Dynamic response, Finite element analysis, Earthquakes, Nevada.
Identifiers: *Earthquake engineering, *Ground motion, *Tall buildings, Seismic design.

The structural analysis of a high-rise building subject to a theoretically produced earthquake is presented. The analysis has been performed with the building situated at three different locations relative to the earthquake epicenter. The building has also been excited using the 1940 El Centro earthquake record. The use of theoretical earthquake models provides local seismic loading levels for use in structural design. Results have been obtained using spectral analysis, modal superposition, and time-stepping.

PB-293 207/7GA PC **A05**/MF **A01**
Massachusetts Inst. of Tech., Cambridge. Dept. of Civil Engineering.
Seismic Response of Buildings Designed by Code for Different Earthquake Intensities. Optimum Seismic Protection and Building Damage Statistics, Report Number 4,
John W. Biggs, and Peter H. Grace. Jan 73, 81p STRUCTURES PUB-358, R73-7, NSF/RA/E-73/546
Grants NSF-GK-27955, NSF-GI-29936

Descriptors: *Buildings, Dynamic structural analysis, Elastic analysis, Dynamic response, Structural design, Building codes, Earthquakes.
Identifiers: *Earthquake engineering, *Ground motion, *Seismic design.

Seismic analyses have been made for five multistory buildings of different types, each designed for five different levels of protection under the UBC Code. Both elastic and inelastic analyses have been made. The former is based directly upon a response spectrum, and the latter is based upon an artificial time-history input generated from the same response spectrum. For the buildings investigated, it is concluded that, for both elastic and inelastic response, the average peak interstory displacement agrees very closely with that predicted by the first-mode elastic response. The elastic limit earthquake and the average maximum ductility ratio bear an approximate linear relationship with the ratio of first-mode elastic base shear to bottom story resistance. It is further concluded that increasing the equivalent static lateral design force, as in conventional code procedures, does not appreciably reduce the interstory displacements. It does, however, increase the elastic limit earthquake and, to a lesser extent, decrease the maximum ductility ratio for a larger earthquake.

PB-293 240/8GA PC **A05**/MF **A01**
National Engineering Lab. (NBS), Washington, DC. Building Economics and Regulatory Technology Div.
Selected Papers Dealing with Regulatory Concerns of Building Rehabilitation.
Final rept.,
Patrick W. Cooke. Feb 79, 98p* NBS-SP-536
Library of Congress catalog card no. 79-600012.

Descriptors: *Buildings, *Rehabilitation, *Building codes, Construction, Fire prevention, Design standards, Fire safety, Law enforcement.
Identifiers: *Historic preservation.

This publication consists of a collection of six papers common to the subject of rehabilitation and preservation of existing buildings and how the present system of regulating construction for the public benefit presents various barriers that must be more fully understood in order that rational solutions can be developed and implemented. The papers have been reprinted from the Proceedings of previous national conferences dealing with building regulatory research held under the joint sponsorship of NBS and the National Conference of States on Building Codes and Standards. The titles of the papers are: 'Building Codes: Preservation and Rehabilitation' by Robert J. Kapsch, 'Information Structure of Building Codes and Standards for the Needs of Existing Buildings' by Baird Smith, 'Contractor Understanding Relative to Rehab Costs' by Richard S. Harrington, 'The Role of Fire

Prevention and Control on Building Construction and Regulation' by William H. McLain, 'Rehabilitation as an Instrument in Meeting Housing Need: Can It Really Work.' by Jane Heron, and 'Building Codes and Historic Preservation in Savannah, Georgia' by Mires Rosenthal.

PB-293 241/6GA PC **A04**/MF **A01**
Sydney Univ. (Australia). Civil Engineering Labs.
The Behaviour of Portal Frames Composed of Cold-Formed Members.
Research rept.,
A. H. Baigent, and G. J. Hancock. Sep 78, 54p R-327

Descriptors: *Houses, *Rigid frames, Cold working, Steel construction, Construction joints, Roofs, Loads(Forces), Australia.

An investigation into the behavior of low-rise structures composed of cold-formed members is described. An experimental study in which seven pitched-roof portal frames were tested to destruction is presented. The frames were subjected to three different loading patterns and supported by two different sets of lateral restraints. The elastic response of each frame is compared with a prediction from a matrix displacement analysis which included thin-walled torsion theory and cross-section monosymmetry. Cross-sectional distortion was incorporated in the study using the finite strip method of analysis.

PB-293 248/1GA PC **A03**/MF **A01**
Massachusetts Inst. of Tech., Cambridge. Dept. of Civil Engineering.
Methodology and Initial Damage Statistics. Optimum Seismic Protection and Building Damage Statistics, Report Number 1,
Robert V. Whitman, C. Allin Cornell, Erik H. Vanmarcke, and John W. Reed. Mar 72, 31p STRUCTURES PUB-339, R72-17, NSF/RA/E-72/266
Grants NSF-GK-27955, NSF-GI-29936

Descriptors: *Buildings, *Earthquake resistant structures, Damage assessment, Probability, Dynamic response, Soil dynamics, Massachusetts.
Identifiers: *Tall buildings, *Earthquake engineering, *Seismic design, Seismic risk, Boston(Massachusetts).

The methodology is presented for analyzing the costs and risks associated with designing tall buildings against earthquakes. The current status of studies concerning actual damage during the San Fernando earthquake and other earthquakes are discussed as well as some of the studies being made as part of the application of the methodology to tall buildings in Boston. The methodology is aimed at selecting seismic design requirements for a specific project or for use in a building code. However, the same general methodology can be used as a basis for insurance considerations or for federal disaster relief laws. The heart of the methodology is examination, in probabilistic terms, of the damage which one earthquake will cause to a particular building system built with a particular design strategy. This evaluation is repeated for different levels of earthquake, different design strategies, and different building systems. For each different design strategy, the initial cost required by that strategy is added to the present value of possible future losses.

PB-293 263/0GA PC **A04**/MF **A01**
National Bureau of Standards, Washington, DC. Law Enforcement Standards Lab.
Catalog of Security Equipment,
John V. Fechter, and Elizabeth M. Robertson. Nov 78, 61p* NBS-SP-480-35
Sponsored in part by National Inst. of Law Enforcement and Criminal Justice, Washington, DC. Library of Congress catalog card no. 78-600140.

Descriptors: *Buildings, *Security, *Catalogs(Publications), Electronic security, Warning systems, Locks(Fasteners), Protectors, Manufacturers.
Identifiers: *Crime prevention, *Intrusion detection, *Intrusion detectors, *Burglary.

This catalog is concerned primarily with security equipment which can be used to prevent 'crimes of opportunity' against homes and businesses. The purpose of the catalog is to make readers aware of the available types of security equipment and to identify their manufacturers. Equipment is classified into four functional areas: physical security, access control, alarm systems, and business and industry equipment. Within each functional area, each item of equipment is identified and described in terms of its cost range, usual application, and manufacturers.

PB-293 527/8GA PC **A05**/MF **A01**
National Engineering Lab. (NBS), Washington, DC. Center for Fire Research.
Mobile Home Fire Studies: Summary and Recommendations.
Mar 79, 96p NBSIR-79-1720
Sponsored by Department of Housing and Urban Development, Washington, DC. Div. of Energy, Building Technology and Standards.

Descriptors: *Houses, *Trailers, *Fires, Fire tests, Fire safety, Construction materials, Finishes, Hazards.
Identifiers: *Mobile homes, *Room fires.

This report provides a summary of the important findings from previously reported parts of the project which involved the conduct of full-scale fire tests in the kitchen, corridor, living room and bedroom areas of typical mobile homes. Also included in this summary are the findings from a previously unreported series of full-scale living room tests, which are discussed in some detail in Appendix A. This report describes the rationale upon which the overall experimental approach was based, and provides a series of recommendations, some in the form of design options, for possible changes to the standard. A limited impact assessment is included to provide a relative measure of the potential impact of each of three design options for flame spread requirements for interior wall and ceiling materials. This assessment is based on the likely effect of each option on fire severity, and does not include an economic analysis.

PB-293 532/8GA PC **A03**/MF **A01**
Sydney Univ. (Australia). Civil Engineering Labs.
Large Deformation Analysis of Submerged Ring Frames.
Research rept.,
H. B. Harrison. Sep 78, 26p R-328

Descriptors: *Underwater structures, *Rigid frames, Loads(Forces), Buckling, Hydrostatic pressure, Numerical analysis, Australia.

Numerical studies are reported of the response to in-plane radial loading of a series of closed ring frames of constant perimeter. Accurate, second-order elastic analyses were made using a discrete element technique that has confirmed the classical buckling pressures for round cylinders under hydraulic loading. Higher buckling modes are readily predicted as well, but of more significance is the demonstration of the nature of the post-buckling behavior of perfect and imperfect ring frames under uniform and non-uniform hydraulic loading of the follower type.

PB-293 542/7GA PC **A08**/MF **A01**
Portland Cement Association, Skokie, IL. Construction Technology Labs.
Earthquake Resistant Structural Walls - Tests of Coupling Beams. Final Report.
Rept. for 1974-77,
G. B. Barney, K. N. Shiu, B. G. Rabbat, A. E. Fiorato, and H. G. Russell. Jan 78, 152p PCA-R/D-SER-1583, NSF/RA-780501
Grant NSF-ENV74-14766
See also report dated 29 Oct 76, PB-261 733.

Descriptors: *Earthquake resistant structures, *Walls, *Beams(Supports), Concrete construction, Reinforced concrete, Dynamic structural analysis, Cyclic loads, Mechanical hysteresis, Energy dissipation, Structural design.
Identifiers: *Earthquake engineering, Coupling beams.

Eight model reinforced concrete coupling beam specimens were subjected to reversing loads representing those that would occur in beams of coupled structural walls during a severe earthquake. Effects of selected variables on hysteretic response were determined. Controlled variables included shear span-to-effective depth ratio of the beams, reinforcement details, and size of the confined concrete core. Tests indicated that hysteretic performance of beams with conventional reinforcement is limited by deterioration that results in sliding in the hinging region. Full-length diagonal reinforcement significantly improved the performance of short beams. The improvement for long-span beams was less significant. Larger concrete core size improved load retention capacity.

PB-293 557/5GA PC **A06**/MF **A01**
National Research Council, Washington, DC. Committee on Natural Disasters.
Engineering Report on the Managua Earthquake of 23 December 1972.
Mete A. Sozen, and R. B. Matthiesen. 1975, 122p NSF/RA/E-75/332

Descriptors: *Buildings, *Nicaragua, Dynamic structural analysis, Damage assessment, Soil classification, Geology, Seismic waves, Earthquakes.
Identifiers: *Earthquake engineering, *Seismic design, *Seismic risk, Managua(Nicaragua), *Soil structure interactions.

This report summarizes the results of an inspection of the earthquake disaster at Managua, Nicaragua on December 23, 1972 by the Committee on Natural Disasters of the Commission on Sociotechnical Systems of the National Research Council. As an introduction and as background information, an abstract of a presentation on the seismicity of Nicaragua is included. Strong-motion measurements of the earthquake and a general description of structural damage constitute the major portion of this report. The latter is subdivided into a summary, an introduction which includes a description of geology and soils, seismic history, the actual event, immediate social effects, structural history, and structural damage distribution. Another subsection on impressions of structural damage discusses design vs. non-design, shear walls vs. frames, vital services, interaction of structural and non-structural elements, and emergency exits. Approximately one-half of the report consists of full-page photographs showing scenes of Nicaragua, before and after the earthquake, and maps depicting seismicity, accelerograms, and response spectra comparisons.

PB-293 561/7GA PC **A07**/MF **A01**
Purdue Univ., Lafayette, IN. School of Aeronautics and Astronautics.
Theoretical Study of the Dynamic Response of a Chimney to Earthquake and Wind,
T. Y. Yang, L. C. Shiau, Hsu Lo, and J. L. Bogdanoff. 1 Apr 78, 149p NSF/RA-780527
Grant NSF-ENV74-051575

Descriptors: *Chimneys, *Wind pressure, Earthquakes, Cyclic loads, Finite element analysis, Dynamic response, Dynamic structural analysis, Earthquake resistant structures, Kentucky, Electric power plants.
Identifiers: SAP 4 computer program, *Earthquake engineering, *Seismic design, Paradise(Kentucky).

Analytical studies of the elastic and inelastic responses of a chimney to an earthquake are performed. The chimney studied is at the steam generating plant at Paradise, Kentucky of Tennessee Valley Authority. The report describes the geometry and the material property of the chimney at a TVA Power Plant. An existing computer program SAP IV is employed to study the elastic response of the chimney. Both time history and response spectrum analyses are employed to obtain the displacements and forces at various heights of the chimney. A simple method is developed to generate the ground response spectrum as the input data for the response spectrum analysis. In the description of the inelastic response of a chimney to an earthquake, the plastic bending analysis of a chimney is described first. By using the initial strain concept to treat the effects of plastic strains, a governing linear matrix equation is established. Based on the equations and the procedure developed, the behavior of a chimney subjected to cyclic loading is then analyzed. A general equation for the relationship between moment and curvature is derived. The plastic strain distributions in the element at any stage are found through this relationship. Finally, the inelastic response of the chimney is solved by using a step-by-step integra-

tion method coupled with the governing equations and the moment curvature relationship. A computer program is developed to predict the inelastic dynamic behavior of the chimney.

PB-293 569/0GA PC **A02**/MF **A01**
California Univ., Los Angeles. Dept. of Mechanics and Structures.
Failure Analysis of a Reinforced Concrete Frame Structure,
Tomas Guendelman, Gary C. Hart, and Raul Husid. Nov 74, 25p UCLA-ENG-7482, NSF/RA/E-74/498
Prepared in cooperation with Chile Univ., Santiago.

Descriptors: *Buildings, Earthquakes, Concrete construction, Reinforced concrete, Seismic epicenter, Dynamic structural analysis, Earthquake resistant structures, Chile.
Identifiers: Vina del Mar(Chile), Santiago(Chile), *Earthquake engineering, *Seismic design.

This paper describes and explains the failure of a reinforced concrete frame building located in the town of Vina del Mar, approximately 50 kilometers southeast of the Chilean earthquake epicenter. The structure under consideration is of special interest because of the spectacular nature of its failure and also because of the ability of engineers to see its pre- and post-earthquake condition. This was possible because prior to the earthquake there existed two structurally identical reinforced concrete frame buildings at this site. The July 8, 1971 earthquake caused one of the buildings to completely collapse while the other, only a few meters away, remained standing. In addition to a description of the failure, a post-mortem analytical seismic analysis was performed on the structure: (1) A static deal load analysis of a typical interior frame was performed in order to estimate the frame's dead load bending moment diagram; (2) An eigenvalue analysis was performed on the same interior frame, assuming it to be linearly elastic, to determine its natural frequencies and normal mode shapes of vibration; and (3) A pseudo-dynamic failure analysis was carried out on the frame.

14. METHODS AND EQUIPMENT

14B. Laboratories, Test Facilities, and Test Equipment

AD-A064 880/8GA PC **A02**/MF **A01**
Athens State Coll., AL.
Gas Compositional Analysis Using the Real Time Field Contamination Monitor.
Final rept.
1 Nov 77, 23p
Contract DAAK40-76-C-1027

Descriptors: *Contaminants, *Monitors, *Field equipment, Gas chromatography, Mass spectrometers, Real time, Computer applications, Data acquisition, Analog to digital converters, Relays, Decoders.
Identifiers: *Gas analysis, Chemical analysis.

The development of additional hardware and software for the compositional analysis of gas mixture using a gas chromatography - mass spectrometric technique has progressed to faster sampling rates and to a larger degree of automation. Hard copy in real time is also available now. (Author)

AD-A064 897/2GA PC **A05**/MF **A01**
Naval Postgraduate School, Monterey, CA.
Vibration Analysis and Nondestructive Testing Using Holographic Techniques.
Master's thesis,
Phillip P. Hoffmann. Dec 78, 76p

Descriptors: *Aluminum, *Metal plates, *Vibration, Holography, Nondestructive testing, Real time, Rectangular bodies, Cyclic rate, Drives(Electronics), Piezoelectricity, Resonant frequency, Defects(Materials), Mathematical analysis.

Real-time holograms were made of Aluminum rectangular plates. The plates were cyclically vibrated with a piezoelectric driver to allow the fundamental frequencies to be measured and the mode shapes observed. These results were compared with theoretical frequency calculations. The plates were flawed by three different methods, and real-time holograms were again made. The resonant frequencies of each plate were recorded, and each mode shape was observed. A comparison between the plates before and after the flaws was made to determine the applicability of holography to the nondestructive testing of vibrating objects. Results indicate that holographic nondestructive testing (HNDT) of vibrating objects shows great promise for future applications. (Author)

AD-A064 906/1GA PC **A02**/MF **A01**
Harry Diamond Labs., Adelphi, MD.
M817 TDD Depot Surveillance Tester.
Technical memo.,
John A. Frantz. Dec 78, 25p Rept no. HDL-TM-78-17

Descriptors: *Test equipment, *Target detection, *Microprocessors, Reliability(Electronics), Monitoring, Data acquisition, Automatic, Surveillance, Measurement, Test methods.
Identifiers: M-817 target detecting device, Chaparral missiles.

An automatic tester was designed and developed for surveillance testing of the electronic functioning capability of the M817 target detecting device which is used with the Army's Chaparral missile. In building the tester, a four-bit microprocessor was used to control test stimuli, measurement, data acquisition, processing, and display. Voltage current, resistance, energy, and radio frequency sensitivity are measured under several tester modes of operation. The microprocessor is programmed by a combination of high-level and assembly languages. (Author)

AD-A065 089/5GA PC **A03**/MF **A01**
Arizona Univ., Tucson. Dept. of Chemistry.
Empirical Formula Determination with an Inductively Coupled Plasma Gas Chromatographic Detector.
Technical rept.,
David L. Windsor, and M. Bonner Denton. 1 Feb 79, 28p Rept no. TR-17
Contract N00014-75-C-0513

Descriptors: *Gas chromatography, *Chemical composition, Hydrocarbons, Halogen compounds, Plasmas(Physics), Thermal degradation, Parts, Emission spectroscopy, Effluents.
Identifiers: Design criteria, Performance evaluation.

The ability of the inductively-coupled plasma (ICP) gas chromatographic (GC) detector to determine empirical formulas is evaluated. Elemental compositions and empirical formulas of hydrocarbons and halogens are determined as the compounds are eluted from a chromatograph. The observed accuracy and precision are found to be of sufficient quality to indicate that the technique holds promise for the determination of empirical formulas. (Author)

AD-A065 094/5GA PC **A02**/MF **A01**
Arizona Univ., Tucson. Dept. of Chemistry.
Elemental Analysis of Gas Chromatographic Effluents With An Inductively Coupled Plasma.
Technical rept.,
D. L. Windsor, and M. Bonner Denton. 1 Feb 79, 25p Rept no. TR-16
Contract N00014-75-C-0513

Descriptors: *Gas chromatography, *Atomic spectroscopy, *Emission spectroscopy, Plasmas(Physics), Thermal degradation, Effluents, Chemical composition, Metals, Nonmetallic compounds.
Identifiers: Performance evaluation, Comparison, Laboratory equipment.

The performance of the inductively-coupled plasma (ICP) as an element selective gas chromatographic (GC) detector is investigated. Special emphasis is placed on evaluating the ability of the ICP to perform simultaneous multi-element analyses on each component of a mixture. In general, ICP detection limits, linear dynamic ranges and selectivities are shown to compare favorably with those which have been observed for the flame photometric detectors (FPD) and microwave-excited plasma detectors (MEPD). (Author)

AD-A065 112/5GA PC **A09**/MF **A01**
Arnold Engineering Development Center, Arnold AFS, TN.
Calibration of the AEDC-PWT 16-Foot Transonic Tunnel Aerodynamic Test Section at Various Reynolds Numbers.
Final rept. Apr 76-Jun 78,
F. M. Jackson, III. Feb 79, 179p Rept no. AEDC-TR-78-60
Prepared in cooperation with ARO, Inc., Tullahoma, TN.

Descriptors: *Transonic wind tunnels, *Calibration, Reynolds number, Aerodynamics, Test fixtures, Interference, Walls, Angles, Mach number, Spatial distribution, Subsonic flow, Supersonic flow, Transonic flow, Accuracy.

Tests were conducted in the AEDC Propulsion Wind Tunnel (16T) to determine the tunnel test section Mach number distributions and calibration at various Reynolds numbers. Two separate test entries were made. Collectively, the calibration was conducted at Mach numbers from 0.2 to 1.6 and at Reynolds numbers from 500,000/ft to 6 million/ft. The calibration was conducted with the aerodynamic test section (Test Section 2) using a centerline pipe and/or wall pressure orifices to define the Mach number distributions. A quantitative evaluation of the effects of tunnel pressure ratio, test section wall angle, and Reynolds number on the tunnel Mach number distributions and calibration was accomplished. Results indicate that good quality Mach number distributions are obtained for both zero and the optimum wall angle schedule. To obtain the maximum accuracy, the Tunnel 16T calibration must be defined as a function of test section wall angle, Reynolds number, and Mach number. Comparison of this calibration with previous calibration results indicates that a revision in the tunnel calibration used for operations is desirable. Analytical expressions which represent the tunnel calibration at various test conditions were developed for use during Tunnel 16T operations.

AD-A065 113/3GA PC **A02**/MF **A01**
Army Electronics Research and Development Command, Fort Monmouth, NJ. Electronics Technology/Devices Lab.
Compact Megawatt Average Power Pulse Generator.
Research and development technical rept.,
J. E. Creedon, J. McGowan, A. J. Buffa, and S. Schneider. Nov 78, 6p Rept no. DELET-TR-78-26

Descriptors: *Pulse generators, *Modulators, High power.
Identifiers: Burst mode, PFN(Pulse Forming Networks).

No abstract available.

AD-A065 114/1GA PC **A02**/MF **A01**
Army Electronics Research and Development Command, Fort Monmouth, NJ. Electronics Technology/Devices Lab.
Analysis Of An Inductive Energy High Perveance Electron Beam Generator.
Research and development technical rept.,
Maurice Weiner. Nov 78, 11p Rept no. DELET-TR-78-31

Descriptors: *Pulse generators, *Electron beams, High energy, High voltage.
Identifiers: High perveance, Specific energy.

No abstract available.

AD-A065 137/2GA PC **A05**/MF **A01**
Arnold Engineering Development Center, Arnold AFS, TN.
Comparison of Store Trajectory and Aerodynamic Loads, and Model Flow-Field Characteristics Obtained in the AEDC PWT/4T and VFK/A Wind Tunnels at Mach Number 1.63.
Final rept.,
D. W. Hill, Jr., J. T. Best, and R. H. Tolbert. Feb 79, 77p Rept no. AEDC-TR-78-45

Prepared in cooperation with ARO, Inc., Tullahoma, TN.

Descriptors: *Wind tunnel tests, *Aerodynamic loading, Test facilities, Trajectories, Instrumentation, Flow fields, Predictions, Schlieren photography, Test equipment, Wind tunnel models, Data acquisition.

Tests were conducted in the VKF/A and PWT/4T wind tunnels at AEDC to obtain captive trajectory, aerodynamic loads, and flowfield data in order to assess the ability to reproduce trajectories from tunnel to tunnel. The data were obtained with a 0.05-scale generalized shape aircraft model, an ogive-cylinder store model, and conical flow survey probes at and near the centerline fuselage station pylon and the wing 1/3-semispan station pylon. The tests were conducted at a Mach number of 1.63 with aircraft model angle of attack set at zero. Generally, the trajectories obtained in the two wind tunnels compared well. There was very good agreement in the translational motion of the store trajectories, with only slight differences in the angular motion in selected cases. (Author)

AD-A065 151/3GA PC **A04**/MF **A01**
Syracuse Univ., NY.
Study of RADC Newport Antenna Test Range: Methods of Reflection Reductions and Increased Frequency Coverage.
Phase rept.,
J. Perini, and B. Silverman. Jan 79, 71p RADC-TR-78-262
Contract F30602-75-C-0121

Descriptors: *Ranges(Facilities), *Antenna radiation patterns, *Test facilities, Signal processing, Digital systems, Aircraft antennas, Test methods, Multipath transmission, Forward scattering, Ultrahigh frequency, Extremely high frequency, Reduction, Reflectivity, Terrain.
Identifiers: Antenna ranges.

In this report a study of the short and long antenna ranges at the RADC/NEWPORT site is undertaken with the objectives of extending its frequency of operation from 2 GHz down to 200 MHz and from 18 GHz up to 40 GHz. In the report the problem of ground reflections is studied and two solutions are proposed. A short term solution was that of constructing ground fences and a long term solution which consists of processing the signal received using digital signal processing techniques to eliminate the reflections. The ground fences have been constructed and the improvement is documented by measurements before and after the fences were installed. As for the digital signal processing a theoretical study is carried out. A feasibility study of its implementation is recommended. Instrumentation needs for the extension of the site frequency range is also included in the report. (Author)

AD-A065 222/2GA PC **A04**/MF **A01**
Electronics Engineering Group (1842nd), Scott AFB, IL.
A Microprocessor-Based Control Event Scanner.
Final rept.,
James R. Hammer, and Michael D. Verstegen.
31 Jan 79, 58p Rept no. 1842-EEG/EETET-TR-79-6

Descriptors: *Microprocessors, *Data links, *Counters, *Warning systems, Electric relays, False alarms, Analog to digital converters, Timing circuits, Data acquisition, Computer programs, Standardization.
Identifiers: Timers, Event scanners, Performance monitoring, Dedicated instruments, Standard buses.

The Control Event Scanner (CES) is a microprocessor-based device which will control and sense relay contract closures via the IEEE Standard 488-1975 Interface Bus, hereafter known as the General Purpose Interface Bus (GPIB). Through the use of a microcomputer, other functions such as pulse counting, analog to digital conversion, digital timing, etc., are easily implemented. With a fully implemented unit, the capability exists to realize a low-cost, fully programmable automated test fixture suitable for use in a distributed performance assessment network (DPAN). With the use of the GPIB and an internal microcomputer, on-line reconfiguration is possible to implement a variety of dedicated performance assessment instruments. Performance assessment and a fault isolation example are discussed. (Author)

NTIS/PS-79/0359/4GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Metrication in the United States (A Bibliography with Abstracts).
Rept. for 1964-Mar 79,
Guy E. Habercom, Jr. Apr 79, 186p*
Supersedes NTIS/PS-78/0316, NTIS/PS-77/0268, NTIS/PS-76/0305, and NTIS/PS-75/123.

Descriptors: *Bibliographies, *Metric system, *Units of measurement, Standards, Conversion, United States, Economic impact, Attitudes, Problem solving, Industrial relations, Benefit cost analysis, Management planning.
Identifiers: *Metrication, Benefits.

Materials are cited on the metric system of measurements and conversion of U.S. measurements to the metric system. The reports deal with the metrication process, industrial and economic impacts, problems involved, the benefits anticipated, and public reactions and relations. The metric system is discussed, along with its application to various fields. (This updated bibliography contains 179 abstracts, 17 of which are new entries to the previous edition.)

N79-19192/0GA PC **A04**/MF **A01**
Communications Research Centre, Ottawa (Ontario). Radio and Radar Branch.
A Radio Noise Analyzer.
W. R. Lauber, and J. M. Bertrand. Jan 79, 54p CRC-TN-696

Descriptors: *Communication equipment, *Communication theory, *Electromagnetic noise, *Noise meters, Amplitude distribution analysis, Circuit diagrams, Performance tests, Pulse duration modulation, Radio frequency interference, Radio receivers, Random noise.
Identifiers: Canada.

For abstract, see STAR 1710

N79-19314/0GA PC **A07**/MF **A01**
Pratt and Whitney Aircraft, East Hartford, CT. Commercial Products Div.
Strain Gage System Evaluation Program.
Final Report.
G. W. Dolleris, H. J. Mazur, and E. Kokoszka, Jr. Dec 78, 126p NASA-CR-159486, PWA-5615-3
Contract NAS3-20298

Descriptors: *Compressors, *Gas turbine engines, *Rotor blades(Turbomachinery), *Strain gages, *Stress measurement, Acceleration(Physics), Engine tests, Reliability engineering, Temperature effects, Wear tests.

For abstract, see STAR 1710

N79-19316/5GA PC **A03**/MF **A01**
Cornell Univ., Ithaca, NY. Center for Radiophysics and Space Research.
Ge:Ga Testing at Cornell.
Technical Report, Jul. 1978 - Feb. 1979.
D. A. Briotta, Jr., and J. R. Houck. 1979, 50p NASA-CR-158348, CRSR-716
Contract JPL-954603

Descriptors: *Gallium, *Infrared detectors, Performance tests, Infrared astronomy satellite, Tables(Data).
Identifiers: Germanium.

For abstract, see STAR 1710

N79-19402/3GA PC **A03**/MF **A01**
Washington Univ., St. Louis, MO. Dept. of Physics.
Further Development of Ultrasonic Techniques for Non-Destructive Evaluation Based on Fourier Analysis of Signals from Irregular and Inhomogeneous Structures.
Final Report.
J. G. Miller. 30 Mar 79, 26p NASA-CR-158240
Grant NSG-1392

Descriptors: *Fourier analysis, *Nondestructive tests, *Structural analysis, *Ultrasonic tests, Acoustic measurements, Composite materials, Inhomogeneity, Scanners, Scattering coefficients.
Identifiers: Acoustic scattering.

For abstract, see STAR 1710

N79-19457/7GA PC **A03**/MF **A01**
Lockheed Missiles and Space Co., Inc., Sunnyvale, CA.
Structural Alignment Sensor Feasibility Demonstration.
Final Report.
R. H. Anderson, C. C. Huang, and J. R. Hodor. 1978, 43p NASA-CR-158353, LMSC-D644951
Contracts NAS7-100, JPL-955130
Subm-Prepared for JPL.

Descriptors: *Antenna components, *Instrument orientation, *Laser range finders, *Signal processing, Carbon dioxide lasers, Contours, Helium-neon lasers, Retroreflection, Systems engineering.

For abstract, see STAR 1710

PATENT-4 140 002 Not available NTIS
Department of the Air Force Washington DC
Impact Sound Stressing Holding Assembly.
Patent,
James F. Francis, W. Hearn, and Ralph G. Dessauer. Filed 2 May 78, patented 20 Feb 79, 4p AD-D005 816/4, PAT-APPL-902 134
Supersedes PAT-APPL-902 134-78, AD-D005 081.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington DC 20231 $0.50.

Descriptors: *Patents, *Semiconductors, *Wafers, *Acoustic emissions, Impact tests, Holders, Sound pressure, Acoustic attenuation, Stress analysis, Test fixtures, Tubes, Clamps, Rings, Fluorinated hydrocarbons.
Identifiers: PAT-CL-73-12, Teflon.

The patent relates to a holding assembly for impact sound stressing semiconductor wafers and the like, including a novel fixture for securing the wafer across a sound tube by clamping between Teflon rings. A cover membrane is also secured across the sound tube to create a closed space defined by the sound tube, cover membrane and semiconductor wafer. Tungsten spheres located in the closed space bounce between the wafer and the membrane when vibrations are propagated in the sound tube for impact sound stressing the semiconductor wafer. (Author)

PB-292 806/7GA PC **A04**/MF **A01**
Texas Instruments, Inc., Dallas.
Techniques for the Preparation and Analysis of Standard Silicon Semiconductor Specimens for the Ion Microprobe Mass Analyzer.
Final rept.,
Graydon Larrabee, and Robert Dobrott. Jan 79, 62p TI-08-77-49, NBS/GCR-79/158
Contracts NBS-5-35917, ARPA Order-2397
Sponsored in part by Advanced Research Projects Agency, Arlington, VA.

Descriptors: *Microanalysis, Calibrating, Semiconductor doping, Silicon, Silicon dioxide.
Identifiers: Ion microprobe mass analyzers, Ion implantation.

A technique was developed to prepare sodium-, phosphorus-, arsenic-, antimony-, and gold-doped silicon and silicon dioxide reference specimens using ion-implantation techniques. The implants were done in small islands or microdots of various sizes to simulate geometries encountered in semiconductor integrated circuits. The number of dopant atoms per unit area was determined by neutron activation analysis. The reference specimens were applied to methods development and calibration of the ion microprobe mass analyzer (IMMA). IMMA detection limits were experimentally determined. A model for experimentally determining the parameters governing detection limits was developed.

PB-293 341/4GA PC **A03**/MF **A01**
Environmental Monitoring and Support Lab., Research Triangle Park, NC.
Ozone Calibration and Audit by Gas Phase Titration in Excess Ozone. Bendix (Trade Name) Transportable Field Calibration System, Models 8861D and 8861DA.
Thomas A. Lumpkin, and Barry E. Martin. Feb 79, 49p EPA/600/4-79/015

Descriptors: *Gas detectors, *Calibrating, *Ozone, Chemiluminescence, Field tests, Volumetric analysis, Vapor phases, Process charting, Design criteria, Performance evaluation, Gas analysis, Chemical analysis, Air pollution.
Identifiers: *Air pollution detection, Procedures.

Detailed procedures for the dynamic calibration and audit of chemiluminescence ozone analyzers are presented. The calibrations and audits are performed by means of a gas phase titration technique using the rapid gas phase reaction between nitric oxide and ozone with excess ozone present. The purpose of this report is to aid calibration personnel in performing calibrations and audits in exactly the same manner with identical calibration systems. One of the advantages of the procedures is that chemiluminescence ozone analyzers can be calibrated or audited in the field without the bulky equipment required for the neutral buffered potassium iodide calibration procedure. A second advantage is that more precise results can be obtained.

PB-293 383/6GA PC **A03**/MF **A01**
National Bureau of Standards, Washington, DC.
Dimension/NBS. Volume 63, Number 1/2, January/February 1979.
Monthly rept.
Feb 79, 32p NBS/DIM-63/1-2
See also Volume 62, Number 12 dated Dec 78, PB-292 185.

Descriptors: *Periodicals, Dental materials, Measurement, Technology transfer, Electromagnetic interference, Building codes, Standards, Polymers, Chromatography.
Identifiers: National Bureau of Standards, Standard reference materials.

The magazine features short summaries of major technical developments, highlights of work in progress, major speeches and statements by Bureau management, and a listing of NBS publications. The table of contents for the current issue is: Good as gold, S. Washburn; Frontiers of measurement science, M. Baum; Getting federal research to the grass roots, G. Lindsteadt; Seeing the human side of science, S. Liberman; Government and industry officials discuss EMI problems, F. McGehan; New method for assessing building code benefits and costs, M. Heyman; Predicting materials properties of polymers, C. Hans; Tungsten concentrate standard reference material; New analytical chemistry technique being used at NBS--ion-chromatography, W. Koch.

PB-293 964/3GA PC **A02**/MF **A01**
Chamber of Foreign Trade of the German Democratic Republic, Berlin.
The German Democratic Republic's Economic/Technological Congress in the U.S.A. (1st). Lecture 4. Industrial Photogrammetry Instruments from Jenoptik,
Horst Schoeler. 1978, 17p
See also Lecture 3, PB-293 963, and Lecture 5, PB-293 965. Prepared by Jenoptik, Jena (German D.R.). Presented at 'Days of Engineering of the GDR'.
Also available in set of 16 reports PC E19, PB-293 960-SET.

Descriptors: *Photogrammetry, *Instruments, East Germany, Dimensional measurement, Photographic techniques, Instrument characteristics, Photography equipment, Industrial engineering, Utilization, Technology, Technology assessment.

The report is one from a series of lectures presented in the United States during 1978. Each paper discusses, briefly, a particular topic detailing either industrial development or economic growth in the German Democratic Republic.

PB-293 966/8GA PC **A02**/MF **A01**
Chamber of Foreign Trade of the German Democratic Republic, Berlin.
The German Democratic Republic's Economic/Technological Congress in the U.S.A. (1st). Lecture 6. Fluorescence Microscopes and Microphotometers for Research and Operational Purposes from Jenoptik,
Peter Doepel. 1978, 11p
See also Lecture 5, PB-293 965, and Lecture 7, PB-293 967. Prepared by Jenoptik, Jena (German D.R.). Presented at 'Days of Engineering of the GDR'.
Also available in set of 16 reports PC E19, PB-293 960-SET.

Descriptors: *Microscopes, *Photometers, East Germany, Technology, Instruments.
Identifiers: Bioinstrumentation.

The report is one from a series of lectures presented in the United States during 1978. Each paper discusses, briefly, a particular topic detailing either industrial development or economic growth in the German Democratic Republic.

PB-293 967/6GA PC **A02**/MF **A01**
Chamber of Foreign Trade of the German Democratic Republic, Berlin.
The German Democratic Republic's Economic/Technological Congress in the U.S.A. (1st). Lecture 7. The MORPHOQUANT Microscope Image Analyzer - A Step Forward in Automatic Chromosome Analysis,
Peter Doepel. 1978, 10p
See also Lecture 6, PB-293 966, and Lecture 8, PB-293 968. Prepared by Jenoptik, Jena (German D.R.). Presented at 'Days of Engineering of the GDR'.
Also available in set of 16 reports PC E19, PB-293 960-SET.

Descriptors: *Microscopes, East Germany, Instruments, Automation, Chromosomes.
Identifiers: Bioinstrumentation.

The report is one from a series of lectures presented in the United States during 1978. Each paper discusses, briefly, a particular topic detailing either industrial development or economic growth in the German Democratic Republic.

14D. Reliability

AD-A065 325/3GA PC **A02**/MF **A01**
George Washington Univ., Washington, DC.
A New Approach to Inference from Accelerated Life Tests.
Interim rept.,
Frank Proschan, and Nozer D. Singpurwalla. Oct 78, 20p AFOSR-TR-79-0095
Contract N00014-77-C-0263
Prepared in cooperation with Stanford Univ., CA, DAAG29-77-G-0031 and Florida State Univ., Tallahassee, FL Dept. of Statistics, AFOSR-78-3678, Rept. nos. FSU-STATISTICS-M480, TR-78-7.

Descriptors: *Life tests, *Statistical inference, *Accelerated testing, Reliability, Stress analysis, Environmental tests.
Identifiers: Bayesian analysis.

A recent paper has proposed a new approach for making inferences from accelerated life tests. Their approach is significantly different from those that have been considered in the past, and is motivated by what is actually done in practice. A priori information which is generally available to the engineer is incorporated under their approach by adopting a bayesian point of view. The usual assumptions about the failure distributions and the acceleration functions, which are appealing from a statistical point of view, have been sacrificed to achieve greater reality. In this paper, this new approach is applied to some real life data arising from an accelerated life test.

14E. Reprography

AD-A065 029/1GA PC **A02**/MF **A01**
Massachusetts Inst. of Tech., Lexington. Lincoln Lab.
Alignment of X-ray Lithography Masks Using a New Interferometric Technique - Experimental Results.
Journal article,
Stewart Austin, Dale C. Flanders, and Henry I. Smith. 15 Jul 77, 2p MS-4437, ESD-TR-78-297
Contract F19628-78-C-0002
Availability: Pub. in Jnl. of Vacuum Science and Technology, v15 n3 p984-986 May/Jun 78.

Descriptors: *Lithography, *X ray apparatus, Masking, Interferometry, Photolithography, Reprints.

No abstract available.

N79-19315/7GA PC **A03**/MF **A01**
National Aeronautics and Space Administration, Washington, DC.
Application of Multispectral Color Photography to Flame Flow Visualization.
G. Stoffers. Feb 79, 33p NASA-TM-75382, DLR-MITT-74-23
Contract NASW-3199
Tran-Transl. Into English of "Anwendung der Multispektralfotografie Zur Sichtbarmachung von Flammenstrukturen", Rept. Klr-Mitt-74-23 Dfvlr, Brunswich, May 1974 1 p. Misc-Original Language Document Was Announced as N75-10420. Subm-Transl. By Kanner (Leo) Associates, Redword City, CA.

Descriptors: *Color photography, *Flame spectroscopy, *Flow visualization, Flames, High temperature gases, Jet flow, Multispectral photography.
Identifiers: Translations, West Germany.

For abstract, see STAR 1710

PB-293 968/4GA PC **A02**/MF **A01**
Chamber of Foreign Trade of the German Democratic Republic, Berlin.
The German Democratic Republic's Economic/Technological Congress in the U.S.A. (1st). Lecture 8. Modern Machinery and Processes in Printing and Bookbinding from the GDR,
Peter Reinhardt. 1978, 20p
See also Lecture 7, PB-293 967, and Lecture 9, PB-293 969. Prepared by VEB Polygraph, Leipzig (German D.R.). Presented at 'Days of Engineering of the GDR'.
Also available in set of 16 reports PC E19, PB-293 960-SET.

Descriptors: *Printing equipment, *Printing, *Bookbinding, East Germany, Presses, Technology.

The report is one from a series of lectures presented in the United States during 1978. Each paper discusses, briefly, a particular topic detailing either industrial development or economic growth in the German Democratic Republic.

PB-293 969/2GA PC **A02**/MF **A01**
Chamber of Foreign Trade of the German Democratic Republic, Berlin.
The German Democratic Republic's Economic/Technological Congress in the U.S.A. (1st). Lecture 9. Trends in Sheet-Fed Offset Machines Illustrated by the 'Variant'-Type Sheet-Fed Rotary Offset Machine,
HerbeRt Patzelt. 1978, 19p
See also Lecture 8, PB-293 968, and Lecture 10, PB-293 970. Prepared by VEB Palneta, Radebeul (German D.R.). Presented at 'Days of Engineering of the GDR'.
Also available in set of 16 reports PC E19, PB-293 960-SET.

Descriptors: *Presses, *Offset printing, East Germany, Printing equipment, Technology.

The report is one from a series of lectures presented in the United States during 1978. Each paper discusses, briefly, a particular topic detailing either industrial development or economic growth in the German Democratic Republic.

PB-293 970/0GA PC **A02**/MF **A01**
Chamber of Foreign Trade of the German Democratic Republic, Berlin.

The German Democratic Republic's Economic/ Technological Congress in the U.S.A. (1st). Lecture 10. Thread Sealing - A Method to Raise Labor Productivity in the Bookbinding Industry,
Werner Band. 1978, 10p
See also Lecture 9, PB-293 969, and Lecture 11, PB-293 971. Prepared by VEB Polygraph, Leipzig (German D.R.). Presented at 'Days of Engineering of the GDR'.
Also available in set of 16 reports PC E19, PB-293 960-SET.

Descriptors: *Bookbinding, *Sealing, East Germany, Sealers, Technology.

The report is one from a series of lectures presented in the United States during 1978. Each paper discusses, briefly, a particular topic detailing either industrial development or economic growth in the German Democratic Republic.

PB-293 971/8GA PC **A02**/MF **A01**
Chamber of Foreign Trade of the German Democratic Republic, Berlin.
The German Democratic Republic's Economic/ Technological Congress in the U.S.A. (1st). Lecture 11. PLAMAG-Plauen - A Pioneer in Modern Newspaper Production by the Offset Process,
Hans Schaedlich. 1978, 14p
See also Lecture 10, PB-293 970, and Lecture 12, PB-293 972. Prepared by VEB Polygraph, Leipzig (German D.R.). Presented at 'Days of Engineering of the GDR'.
Also available in set of 16 reports PC E19, PB-293 960-SET.

Descriptors: *Offset printing, *Newsprint, East Germany, Presses, Printing equipment, Technology.

The report is one from a series of lectures presented in the United States during 1978. Each paper discusses, briefly, a particular topic detailing either industrial development or economic growth in the German Democratic Republic.

15. MILITARY SCIENCES

15D. Intelligence

AD-A065 458/2GA PC **A03**/MF **A01**
Army Research Inst. for the Behavioral and Social Sciences, Alexandria, VA.
Utility of Automation of Order of Battle and Target Intelligence Data for Intelligence Analysis.
Final rept.,
Steven R. Stewart. Sep 78, 49p Rept no. ARI-RR-1194

Descriptors: *Tactical intelligence, *Strategic intelligence, *Combat information centers, Battlefields, Order of battle, Combat effectiveness, Automation, Division level organizations, Information processing, Tactical data systems, Data bases, Communications networks.

The need to develop a capability to process increasing amounts of intelligence information input by battlefield systems to divisions has led to the establishment of an Army work program to determine user requirements for a Tactical Operations System (TOS). As part of the program, a series of software packages is being evaluated by the Army Research Institute for the Behavioral and Social Sciences for potential inclusion as requirements for a prototype TOS. The first of these packages--automated Order of Battle (OB) and Target Intelligence (TI) files--was evaluated in the present study. A series of intelligence tasks was accomplished by two groups, each consisting of 10 subjects qualified as intelligence analysts. Both groups worked with a basic simulated TOS. The experimental group had access to automated OB and TI files; the control group used OB and TI files in manual form. Automation of the files significantly increased both the accuracy and the completeness with which intelligence requirements were accomplished but did not increase the speed of completion of those requirements. (Author)

15E. Logistics

AD-A064 855/0GA PC **A02**/MF **A01**
Army Quartermaster School, Fort Lee, VA.
US Army Rigid Wall 8 ft x 8 ft x 20 ft Shelters and US Marine Corps 8 ft x 8 ft x 20 ft Rigid Wall and Knockdown Shelters.
Independent evaluation rept.
Oct 78, 11p

Descriptors: *Shelters, *Army equipment, *Military equipment, Operational effectiveness, Field tests, Endurance(General).

A need existed to determine the operational effectiveness and military utility of the proposed US Army ISO configured rigid wall shelters and the US Marine Corps ISO configured rigid wall and knockdown shelters. A military potential type test was conducted with the Army shelters in 1975 and 1976 and a Force Development Test Evaluation (FDTE) took place in 1978 on the US Marine Corps ISO shelters. The tests and evaluation include unloading, erecting/expanding/complexing, striking, loading and transportability, and the maintenance implications. The purpose of the tests and evaluation is to determine if the shelters should be considered as candidates for the Army family of rigid wall standard shelters. The IER recommendation states that the US Army nonexpandable, one-side and two-side expandable, and 50-foot expandable shelters are acceptable as candidates for the Army family of rigid wall shelters and the US Marine Corps shelters be considered further as candidates for the Army family of shelters. (Author)

AD-A064 858/4GA PC **A06**/MF **A01**
Ford, Bacon and Davis, Inc., New York.
A Land Management Technique for the Optimal Placement of Facilities in an Amphibious Objective Area (AOA).
Final rept.
Oct 78, 119p CEL-CR-79.001
Contract N68305-77-C-0032

Descriptors: *Site selection, *Military facilities, *Amphibious operations, Marine Corps operations, Forward areas, Land use, Optimization, Construction, Vegetation, Terrain, Drainage, Earthwork, Excavation, Parametric analysis, Mathematical models.

At present, a number of separate maps, charts, and tables are required, and manual techniques are used to estimate construction effort and determine where facilities should be placed in an AOA. Present techniques are time consuming, which makes it difficult to optimize placement of facilities within operational constraints to minimize the construction effort and avoid relocation of facilities at a later time. A methodology is developed which is expected to reduce horizontal construction effort by 20%; included are depictions of significant attributes of terrain, facilities, and their interrelations. The methodology was successfully exercised in a near-operational, MAF-size example. Automation of the methodology and of the construction effort computations to produce a computerized system is presently underway. (Author)

AD-A064 863/4GA PC **A06**/MF **A01**
Naval Postgraduate School, Monterey, CA.
Weapon Systems Source Selection: Is Four - Step the Answer.
Master's thesis,
Michael James Miller. Dec 78, 125p

Descriptors: *Military procurement, *Contract administration, *Contract proposals, Weapon systems, Vendors, Sources, Selection, Acquisition, Specifications, Contracts, Department of Defense, Cost estimates, Theses.
Identifiers: Four Step source selection.

The Department of Defense source selection process for negotiated acquisitions has been plagued by charges of unfair competition and unsound business practices for years. Beginning with the Harvard Weapons Acquisition project in 1962, continuing with various industry studies in the 1960's through the findings of the Commission on Government Procurement released in the early 1970's, DOD weapon systems acquisition procedures have come under close scrutiny and increased criticism. Past statutes have failed to control, and even encouraged such practices as 'technical leveling,' 'technical transfusion,' 'auctioning,' and 'buy-ins.' Poorly written Requests for Proposal have added to the confusion and uncertainty surrounding the source selection process. In 1976, DOD began a two year test study of a source selection method called 'Four-Step' which had been adapted from NASA procedures. The four steps in the process were (1) submission and evaluation of technical proposals; (2) submission and evaluation of cost proposals as well as revisions to technical proposals; (3) the establishment of a common cut-off date for 'best and final' offers and selection of the apparent winning contractor; and (4) negotiation and award of a definitive contract. This study looks at current procedures and the history of continuing problems. The probable effects of the new Four-Step procedures on those problems are then analyzed. Finally recommendations are presented for changes to the new DAR 4-107 text adopted in October 1978. (Author)

AD-A064 866/7GA PC **A06**/MF **A01**
Naval Postgraduate School, Monterey, CA.
A Decision Model and Data Collection Guide for Planning Change in Material Distribution Systems.
Master's thesis,
George Richard Boyt. Dec 78, 113p

Descriptors: *Logistics management, Decision making, Data acquisition, Systems analysis, Systems management, Computer applications, Materials handling, Distribution, Management information systems, Management engineering, Management planning and control, Modification, Systems engineering, Naval logistics, Minicomputers, Microprocessors, Theses.

Technological advancements in materials handling systems and computer applications offer appealing solutions to the military material distribution system managers who are being forced to seek productivity improvements because of spiraling operating costs. However, these managers have little planning guidance and reference material to help them decide what to do. The purpose of this thesis is therefore to provide such help. A decision model is developed and suggestions are made for collecting data for use in the model. In addition, a summary of experiences of industry and military activities attempting to automate the materials handling functions is presented. (Author)

AD-A064 898/0GA PC **A05**/MF **A01**
Naval Postgraduate School, Monterey, CA.
Equipment Replacement Problems at Navy Industrially Funded (NIF) Research, Development, Test and Evaluation (RDT and E) Activities.
Master's thesis,
Donald Reid Bridges. Dec 78, 78p

Descriptors: *Finance, *Naval research laboratories, Instrumentation, Obsolescence, Test equipment, Replacement, Costs, Allocations, Naval equipment, Test and evaluation, Accounting, Naval budgets, Management planning and control, Theses.
Identifiers: NIF(Navy Industrial Fund), Capitalization.

For many years the Navy industrially funded (NIF) Research, Development, Test and Evaluation (RDT/E) activities have been forced to utilize appropriated funds as the primary resource for replacement of general purpose equipment. In recent years, the budget review process has been such that these funds have been drastically reduced, creating a management problem for the activities. The equipment is becoming obsolete, and difficult as well as expensive to repair. There is a need to upgrade quality and capability, which in turn would result in lower costs to the customers of the NIF RDT/E activities. Recent trends indicate a growing acceptance, even pressure, to expand the authority of managers by allowing the capitalization of equipment. Statements by the General Accounting Office, the Defense Audit Agency and the OSD Assistant General Counsel indicate that capitalization of equipment is indeed a valuable management tool. The writer recommends that the Navy obtain authority to capitalize general purpose equipment at the NIF RDT/E activities, as a tool

necessary for the accomplishment of their respective missions. (Author)

AD-A064 991/3GA MF **A01**
Office of Naval Research, Arlington, VA.
Naval Research Logistics Quarterly. Volume 25, Number 3.
Sep 78, 198p
Availability: Superintendent of Documents, GPO, Washington, DC 20402. HC$2.85. Microfiche furnished to DDC (and NTIS) users.

Descriptors: *Naval logistics, *Inventory analysis, Computerized simulation, Dynamic programming, Markov processes, Linear programming, Queueing theory, Decision theory, Scheduling, Algorithms, Inventory control, Logistics management, Recovery, Naval research, Periodicals.

Partial Contents: Approximations in Multi-Level, Multi-Echelon Inventory Systems for Recoverable Items; Inventory Depletion with Random and Age-Dependent Lifetimes; Approximating Partial Inverse Moments for Certain Normal Variates with Application to Decaying Inventories; All-Integer Linear Programming - A new approach via dynamic programming; Solution of Continuous-Time Markovian Decision Models using Infinite Linear Programming; Renewal Processes of Phase Type; Techniques for Establishing Ergodic and Recurrence Properties of Continuous-Valued Markov Chains; Maximizing the Sum of Certain Quasiconcave Functions using Generalized Benders Decomposition; A Heterogeneous Arrival and Service Queueing Loss Model; Optimal Dispatching Strategies for Vehicles Having Exponentially Distributed Trip Times; Evaluation of Commonly Used Rules for Detecting 'Steady State' in Computer Simulation; and Probabilistic Formulations of the Multifacility Weber Problem.

AD-A065 254/5GA PC **A02**/MF **A01**
Texas A and M Univ., College Station.
Physical Inventory Taking Using Inventory Records and Direct on-the-Spot Monitoring.
Technical rept.,
H. O. Hartley, and William Michael Bowen. Apr 78, 21p TR-4, ARO-14209.5-M
Grant DAAG29-77-G-0086

Descriptors: *Inventory control, *Quality control, Quality assurance, Inventory analysis, Statistical samples, Inventory.

An integral part of any commercial activity is the periodic counting of assets. In some larger establishments (such as a complex of warehouses and arsenals) this is a major undertaking involving many man-hours of labor. It is customary to take such an inventory on an annual basis. This report provides an approach which employs a sampling design in which items are inspected on a rotating basis but also uses the time series of inventory records. The present procedure, therefore provides: (1) a quality control of the inventory records protecting the establishment from having to use inventory records that are seriously in error, and (2) a method of computing best estimates of complete inventories for items at any specified time with computable statistical errors of inventory estimation. As indicated above, the method is a combination of rotation sampling of items and the application of an autoregressive time series analysis applied to the inventory records. (Author)

AD-A065 264/4GA PC **A04**/MF **A01**
Army Materials and Mechanics Research Center, Watertown, MA.
Experimental Testing of an Accordion Shell for an Expandable Shelter.
Final rept.,
Robert J. Morrissey. Dec 78, 55p Rept no. AMMRC-TR-78-51

Descriptors: *Expandable structures, *Shelters, Army equipment, Test methods, Strain(Mechanics), Snow.

The Army's prototype 50-foot expandable shelter consists of a rigid shipping container measuring about 8x20 feet x 8 feet high. The two 20-foot sides, each comprised of four hinged, rigid panels, expand to form the floor and end walls of an overall 20x50-foot shelter. Each expandable section is covered by an accordion-type sandwich panel shell which serves as the roof and side walls. The goal of this project was to evaluate the capability of the shell to sustain simulated snow loading so that future shells could be designed more effectively. The snow loading was simulated by placing plywood sheets on the shell roof incrementally. Deflection and strain measurements were obtained at various specific locations on the shell roof and one side wall using several telescopic measuring devices and strain gage rosettes. These data were to be subsequently compared with an existing finite element analysis. The deflection data were basically symmetric throughout the shell and relatively linear with the loading. The strain data were generally linear with the loading, but fairly low in value. These relatively low strain values were attributed to the fact that much of the structural response action of the shell to loading took place in the shell's joints or folds. (Author)

AD-A065 300/6GA MF **A01**
Deputy Chief of Staff for Research Development and Acquisition (Army), Washington, DC.
Department of the Army Procurement Programs Exhibit P-1, Supporting Data for FY 80 Budget Estimate, The President's Budget, January 1979.
Jan 79, 77p
Availability: Microfiche copies only.

Descriptors: *Army procurement, *Army budgets, Army equipment, Cost estimates, Army aircraft, Guided missiles, Tactical weapons, Combat vehicles, Ammunition, Estimates.

Exhibit P-1 document contains prior, current and budget year quantities and dollars for Aircraft, Missiles, Weapons and Tracked Combat Vehicles, Ammunition and other procurement, Army Appropriations programs contained in the President's FY 80 Budget, submitted January 1979.

AD-A065 342/8GA PC **A02**/MF **A01**
Florida Univ., Gainesville. Dept. of Industrial and Systems Engineering.
Dynamic Analysis of Multi-Echelon Supply Systems,
J. F. Burns, and B. D. Sivazlian. 1 Mar 78, 10p
ARO-12640.36-M
Grant DAHC04-75-G-0150
Availability: Pub. in Computation and Industrial Engineering, v2 p181-193 1978.

Descriptors: *Inventory control, Logistics planning, Decision theory, Servomechanisms, Input output models, Supplies, Reprints.

No abstract available.

AD-A065 457/4GA PC **A03**/MF **A01**
Construction Engineering Research Lab. (Army), Champaign, IL.
A Prototype Procedure for Facility Design Reviews.
Interim rept.,
Roger L. Brauer, and David L. Dressel. Feb 79, 36p Rept no. CERL-IR-E-145

Descriptors: *Construction, *Facilities, Military requirements, Army, Experimental design, Prototypes, Value engineering.

This report covers the initial phase of a study to develop a prototype procedure for the review of the facility designs that will insure that the facility is fully functional when constructed. This report describes who would be involved in the review process, the responsibilities that each party would bear, how the process activities should be ordered, and how major parties would conduct their portions of the review. (Author)

PATENT-4 140 225 Not available NTIS
Department of the Air Force Washington DC
Sheet Material Storage Rack.
Patent,
William H. Hilgers, and Owen F. Martin. Filed 29 Jul 77, patented 20 Feb 79, 4p AD-D005 817/2, PAT-APPL-820 493
Supersedes PAT-APPL-820 493-77, AD-D004 299.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $0.50.

Descriptors: *Patents, *Storage racks, *Materials handling equipment, Sheets, Suspending(Hanging), Frames, Supports.
Identifiers: PAT-CL-211-162.

The patent describes a storage rack suitable for maintaining sheet material free of surface scratches, dents, dings, etc. caused by handling and moving. A rectangular frame as large as the largest sheet to be stored is suspended from an overhead monorail. A channel member forming the lower edge of the frame supports the sheets which lean against the frame and are held in place by diagonal straps. A plurality of parallel overhead rails each of which supports a single frame provide the storage area. The overhead rails are at least twice the overall length of the frames to allow a selected frame to be moved from its storage position into the open where a desired sheet may be removed or added and the frame pushed back to its stored position without chance of damage to the sheet. (Author)

PB-293 244/0GA PC **A08**/MF **A01**
Booz-Allen and Hamilton, Inc., Bethesda, MD.
Evaluation of a Domestic Container Feeder Service on the Atlantic and Gulf Coast.
Final rept.
Feb 79, 170p* MA-RD-940-79040
Contract MA-8-3035

Descriptors: *Cargo ships, *Cargo transportation, Market research, Economic analysis, Seaports, Marine terminals, Law(Jurisprudence), United States.
Identifiers: *Containerships, Atlantic Coastal Plain Region(United States), Gulf Coastal Plain Region(United States).

The Maritime Administration and Sea-Land Service, Inc., jointly undertook this study of a coastwise shipping service in the U.S. Gulf and East Coasts. The service investigated was one that would have the potential to handle domestic cargo in coastwise movement, and international relay cargo from secondary ports to load center ports. The principal findings were: the potential market for a waterborne feeder system in 1980 will include over 5 million TEU's of containerable international shipments and over 1.6 million TEU's of containerable domestic cargo; competitive factors will limit the market share that a feeder system can obtain; four feeder systems offer the opportunity for high load factors; the candidate feeder systems can capture over 170,000 TEU's of international cargo annually; feeder system costs are generally higher than the overland alternative but, depending upon the specific conditions, can be competitive with a direct call by the line haul vessel; although the legal framework does not encourage the development of feeder systems, it does not prohibit or severely limit them; and the overall impact of the proposed feeder system on the U.S. economy will exceed $475 million over a 20-year span.

15F. Nuclear Warfare

UCRL-82012 PC **A02**/MF **A01**
California Univ., Livermore. Lawrence Livermore Lab.
Mach 130 Air Shock Attenuation Studies.
H. D. Glenn, H. R. Kratz, D. D. Keough, and R. P. Swift. 30 Nov 78, 19p CONF-781197-1
Contract W-7405-ENG-48
Nuclear blast and shock simulation symposium, San Diego, CA, USA, 28 Nov 1978.

Descriptors: *Nuclear explosions, *Ordnance, *Subsurface structures, Blast effects, Cratering explosions, Pipes, Shock waves, Simulation, Surface explosions, Tunnels, Vehicles.
Identifiers: ERDA/450202.

For abstract, see ERA citation 04:024461.

15G. Operations, Strategy, and Tactics

AD-A065 005/1GA PC **A03**/MF **A01**
RAND Corp., Santa Monica, CA.

A Method for Evaluating Advanced Systems and Concepts for Ground Combat.
Interim rept.,
E. Paxson, and M. Weiner. Nov 78, 35p Rept no. RAND/R-2365-ARPA
Contract MDA903-78-C-0121, Grant ARPA Order-3486

Descriptors: *Land combat, *Guided weapons, Weapon system effectiveness, Line of sight, Terrain models, Attack, Indirect fire, Tactical weapons, Mortars, Computer programs, Combat effectiveness, Army operations, War games, Germany(East and West).
Identifiers: Technology, Assessment.

This report presents a method for illuminating the interrelationships between a proposed advanced ground combat system's technological characteristics and its tactical employment. The method uses a three-dimensional 'terrain table a computer program for determining whether and for how long a line of sight exists between a sensor and a target, and a series of analytic modules developed for a hand calculator to determine the outcomes of engagements. To illustrate the use of the method, evaluations were carried out involving advanced direct-fire and in-direct fire systems. The results of such evaluations can highlight issues of system design and performance and point the way toward useful field tests, experiments, and simulations of advanced systems. The method is most valuable if used early in a system's conceptualization phase.

AD-A065 107/5GA PC **A06**/MF **A01**
Army Command and General Staff Coll., Fort Leavenworth, KS.
A Theory of Revolutionary Warfare and its Application to the Bolivian Adventure of Che Guevara.
Master's thesis,
John David Waghelstein. 1973, 121p

Descriptors: *Guerrilla warfare, Insurgency, Military forces(Foreign), Military strategy, Military tactics, Military operations, Bolivia, International relations, Theses.

The examples of insurgency, revolutionary or guerrilla warfare cited in this paper, while possessing unique geographical, sociological, and political characteristics, also contain similarities that facilitate comparison. The common element is that of popular support. Whether it was resistance to a foreign invader, expulsion of a colonial power, or change in political system, none were accomplished without popular support. Insurgents have often been guilty of underestimating the importance of the population, have relied too heavily on purely military solutions, and have suffered setbacks and defeat. Successful movements have been marked by the ability of the leadership element to marshal popular support. By accurately assessing (or by stimulating) popular goals, desires, and expectations, insurgents have been able to channel those desires into action. The specialized insurgent organization in addition to simply voicing popular desires, conducts numerous activities including armed propaganda, terror, sabotage, assassination, and guerrilla warfare. The choice of activity may depend on geographical, sociological, and/or political considerations. In one situation a Grivas might use terror as the only viable option while in another situation a Castro might use several.

AD-A065 177/8GA PC **A11**/MF **A01**
Army Combat Developments Command, Fort Belvoir, VA.
Army Roles, Missions, and Doctrine in Low Intensity Conflict (ARMLIC). Preconflict Period.
Final rept.,
Ralph T. Tierno. 1 Feb 71, 229p

Descriptors: *Limited war, *Army operations, Missions, Military forces(United States), Army, Military doctrine, Tactical analyses, Government(Foreign), Conflict, Low intensity, Avoidance, Factor analysis, Literature surveys.
Identifiers: ARMLIC(Army Roles Missions and Doctrine in Low Intensity Conflict), Preconflict period.

ARMLIC is the acronym for a five-part study on Army Roles, Missions, and Doctrine in Low Intensity Conflict. This document, on the preconflict period, covers the first two parts of ARMLIC through that period. The study was designed to identify the factors that lead to change in, or loss of control by, Government and to the establishment of a climate conducive to low intensity conflict; to determine the appropriate roles and missions of the Army in such situations; and to develop the operational, organizational, and materiel concepts and doctrinal principles to support those roles and missions. Findings are based on extensive research of literature pertinent to low intensity conflict and on indepth research on seven countries in which such conflict has occurred. Comparison and analysis of common factors in specific situations led to development of a system for recognizing and assessing preconflict situations. Conclusions and recommendations, derived from the total study effort, offer possible means for meeting the unique requirements and the challenge of low intensity conflict. Emphasis has been placed on the desirability and possibility of averting such conflict.

AD-A065 453/3GA PC **A13**/MF **A01**
Air Force Academy, CO.
The Strategy of Electromagnetic Conflict,
Richard E. Fitts. Feb 79, 286p

Descriptors: *Electronic warfare, Electronic counter countermeasures, Jamming, Threat evaluation, Electronic countermeasures, Radar equipment, Aircraft interception, Radar homing, Air defense, Military strategy, Air Force training, Textbooks, Networks, Cryptography.
Identifiers: Electromagnetic warfare, Electronic intelligence.

The purpose of this text is to make you aware of the capabilities, limitations and applications of the diversified science of electronic warfare. Unfortunately electronic warfare is not electronic, it is not conducted using electrons; but it is electromagnetic and it uses as its battleground the total spectrum of electromagnetic radiation. Granted that this radiation is usually generated by 'electronic' equipment, the converse is definitely not true, that all electronic equipment is involved in this conflict. However, the advent of new, modern weapons systems seems to correspond to progressively greater reliance upon victory in this electromagnetic conflict as a prerequisite for victory in battle. Hence every commander must understand the principles involved in this silent and invisible battle so he can turn it to his advantage; he must understand the effect. It is this silent and unseen electromagnetic conflict that is the subject of this book.

16. MISSILE TECHNOLOGY

16A. Missile Launching and Ground Support

AD-A065 003/6GA MF **A01**
Army Electronics Command, White Sands Missile Range, NM. Atmospheric Sciences Lab.
19303A GSRS Missile Numbers 1015 and 1016, Round Numbers V-15 and V-16.
Meteorological data rept.
Feb 79, 32p Rept no. DR-984
Availability: Microfiche copies only.

Descriptors: *Meteorological data, *Guided missile ranges, Flight testing, Ballistics, Wind velocity, Sounding rockets, Data acquisition.

Meteorological data gathered for the launching of 19303A GSRS, Missile Number 1015 and 1016, Round Numbers V-15 and V-16, are presented in tabular form. (Author)

16C. Missile Warheads and Fuses

AD-A065 173/7GA PC **A15**/MF **A01**
Calspan Advanced Technology Center, Buffalo, NY.
Studies of the Effects of Transitional and Turbulent Boundary Layers on the Aerodynamic Performance of Hypersonic Re-Entry Vehicles in High Reynolds Number Flows.
Final rept. 1 Oct 75-30 Nov 77,
Michael S. Holden. Dec 78, 326p CALSPAN-AB-5834-A-2, AFOSR-TR-79-0125
Contract F44620-76-C-0037

Descriptors: *Reentry vehicles, *Boundary layer transition, *Aerothermodynamics, *Turbulent boundary layer, *Hypersonic vehicles, Nose tips, Slender bodies, Aerodynamic configurations, Hypersonic characteristics, Reynolds number, Hypersonic flow, Flow separation, Aerodynamic heating, Heat transfer, Shock waves, Interactions, Ablation, Nose cones, Particles, Surface roughness, Aerodynamic stability, Pressure distribution, Temperature gradients, Frustums, Angle of attack, Blunt bodies, Guided missile trajectories, Aeroballistics, Accuracy, Survival(General).

This report describes a series of studies to investigate the underlying aero-thermodynamic phenomena which influence the accuracy and survivability of Ballistic Reentry Vehicles. The influence of transition on the aerodynamic characteristics of slender RV's is discussed first. Here the primary interest was in determining the influence of the angle of attack and bluntness ratio on the shape of the transition front and the properties of these regions. A detailed study was made of the influence of asymmetric nose bluntness on the pressure and heat transfer distribution over the cone frustum, and the contribution of the cone frustum to the forces and moments experienced by the total configuration. Particular emphasis was placed on determining the destabilizing effect of the NRV and RTE nose shapes recovered from flight tests. It was found that nose shaping can significantly change the pressure distribution over the conical frustum relative to a spherically-capped configuration; this effect must be accounted for if accurate predictions of cone stability at low altitude are required. Detailed heat transfer and pressure measurements made on a model of the NRV nose shape for test conditions indicated that regions of flow separation and shock wave boundary-layer interaction were induced over this configuration and produced heating rates in the reattachment regions on the ablated conical frustum of up to three times those recorded at the stagnation point on the spherical nose tip.

AD-A065 505/0GA PC **A02**/MF **A01**
Washington Univ., Seattle. Dept. of Aeronautics and Astronautics.
On the Problem of Sustained Resonance,
L. Lewin, and J. Kevorkian. 31 May 77, 19p
AFOSR-TR-79-0098
Grants AFOSR-76-3054, NSF-MCS77-04944
Availability: Pub. in SIAM Jnl. on Applied Mathematics, v35 n4 p738-754 Dec 78.

Descriptors: *Reentry vehicles, *Roll, *Resonance, Asymmetry, Mass, Atmosphere entry, Spinning(Motion), Computerized simulation, Numerical integration, Mathematical prediction, Reprints.
Identifiers: Sustained roll resonance.

No abstract available.

16D. Missiles

AD-A064 973/1GA PC **A02**/MF **A01**
Dayton Univ., OH. School of Engineering.
USAF/ASEE Summer Faculty Program Research on Design Analysis for Dual-Mode Air-Launched Missile System. Volume I.
Final technical rept. Jun-Aug 78,
Jay D. Pinson, Donald E. Lewis, Fred Orazio, F. Gerard Albers, and Albert W. Biggs. Dec 78, 18p UDR-TR-79-04-VOL-1, UDSE-TR-78-13-VOL-1, AFOSR-TR-79-0064
Contract F49620-78-C-0011

Descriptors: *Guided missiles, *Weapon system effectiveness, Dual mode, Air launched, Advanced weapons, Strategic weapons, Trade off analyses, Risk, Integral rocket ramjets, Ramburners, Radar cross sections, Evasion, Survival(General), Life cycle costs, Cost estimates.
Identifiers: Advanced Strategic Air Launched Missiles, Survivability, ASALM system.

This report represents the results of an analysis of major technical aspects of the advanced strategic air launched missile (ASALM) system concept as

developed independently by two aerospace contractors for the U.S. Air Force. The objectives were to: provide the Air Force with an independent assessment of the technical risks associated with the major system and sub-systems of an ASALM, identification and analysis of critical ASALM performance parameters which offset overall system effectiveness, and identification of system design tradeoffs in high technical risk areas which would optimize overall system effectiveness. The Study Group investigated the major subsystems area from the viewpoint of a totally integrated weapon system in order to assess the system performance, identify critical problem areas and identify major discrepancies in the estimation of the life cycle cost. Basically the value of this effort is established in the reinforcement of the importance of those critical technology and performance factors which could delay the progress or degrade the performance of the proposed weapon system. Thus the data and comments reported as a result of this investigation will assist in formulation of criteria for the selection of a final Advanced Air Launched Strategic System.

AD-A064 976/4GA PC **A06**/MF **A01**
Georgia Tech Research Inst., Atlanta.
Effects of Various Exhaust Plume Models on Missile Skin Currents.
Phase rept.,
T. K. Wu, D. R. Wilton, and L. L. Tsai. Jan 79, 118p RADC-TR-78-261
Contract F30602-75-C-0118
Prepared in cooperation with Mississippi Univ., University.
Availability: Microfiche copies only.

Descriptors: *Electromagnetic induction, *Exhaust plumes, *Skin(Structural), Electric current, Mathematical models, Data reduction, Computer graphics, Antennas, Wire, Bodies of revolution, Ionization trails, Electrical conductivity.

The effects on the missile skin current due to the presence of an exhaust plume are studied via analyzing thin-wire and body-of-revolution models of the missile/plume configuration. In the wire model, the simple and efficient thin wire theory and numerical methods are used to estimate order of magnitude effects by treating the missile as a thin cylinder and the plume as an attached lossy cylinder. Several body-of-revolution models are also described, compared and used to analyze large radius plumes modeled both as homogeneous and inhomogeneous bodies-of-revolution. Extensive results are presented for all models to permit one to compare the differences in currents induced on the missile with and without the plume as functions of frequency, incidence angle of the plane wave source, plume conductivity, and plume shape. (Author)

N79-18918/9GA PC **A23**/MF **A01**
Von Karman Inst. for Fluid Dynamics, Rhode-Saint-Genese (Belgium).
Missile Aerodynamics, Volume 1.
1976, 529p VKI-LECTURE-Ser-88-V-1
Seri-2. Conf-Lecture Held at Rhode Saint Genese, Belgium, 29 Mar. - 2 Apr. 1976.

Descriptors: *Aerodynamics, *Missile design, *Missiles, Air breathing engines, Aircraft control, Missile components, Missile configurations, Weapons, Wings.
Identifiers: Belgium.

For abstract, see STAR 1710

N79-18927/0GA PC **A23**/MF **A01**
Von Karman Inst. for Fluid Dynamics, Rhode-Saint-Genese (Belgium).
Missile Aerodynamics, Volume 2.
2 Apr 76, 546p VKI-LECTURE-Ser-88-V-2
Seri-2. Conf-Lecture Held at Rhode Saint Genese, Belgium, 29 Mar. - 2 Apr. 1976.

Descriptors: *Aerodynamic characteristics, *Aerodynamics, *Missiles, Aerodynamic configurations, Angle of attack, Kinetic heating, Missile design, Models, Weapons.
Identifiers: Belgium.

For abstract, see STAR 1710

17. NAVIGATION, DETECTION, COMMUNICATIONS, AND COUNTERMEASURES

17A. Acoustic Detection

AD-A064 896/4GA PC **A05**/MF **A01**
Naval Postgraduate School, Monterey, CA.
Real Time Kalman Filtering for Torpedo Range Tracking.
Master's thesis,
Dennis Michael Dwyer. Dec 78, 99p

Descriptors: *Underwater tracking, *Kalman filtering, *Acoustic tracking, *Torpedo trajectories, Position finding, Three dimensional, Real time, Computer programs, Estimates, Sequential analysis, Subroutines, Acoustic arrays, Hydrophones, Matrices(Mathematics), Inversion, Transitions, Torpedoes, Acoustic ranges, Washington(State), Theses.

Two Extended Kalman filter routines, one using a one-step estimation/prediction and the other a sequential approach, were developed and compared to provide real time estimates of target positions on the three dimensional underwater tracking range at Naval Underwater Weapons Engineering Station, Keyport, Washington. Inputs to the routines were acoustic pulse transit times from the target to receiving array elements which are nonlinear functions of the position coordinates. These inputs were linearized and the filter gains calculated on-line. Simulated runs were conducted for tracks in the area of one hydrophone array and for tracks that transited through multiple arrays. It was found that the sequential estimate routine exhibited better performance in recovering from transients caused by random measurement noise or target movement. (Author)

AD-A065 028/3GA PC **A02**/MF **A01**
Scripps Institution of Oceanography, San Diego, CA. Marine Physical Lab.
Backscattering from Discrete Targets at 87.5 KHZ.
Summary rept.,
G. T. Kaye. 13 Feb 78, 14p Rept no. MPL-U-2/78
Contract N00014-75-C-0749
Availability: Pub. in Jnl. of the Acoustical Society of America, v64 n2 p556-562 Aug 78.

Descriptors: *Sonar targets, *Backscattering, *Zooplankton, Underwater targets, Reverberation, Low frequency, Reprints.
Identifiers: Acoustic sounding, Animal densities, Squid, Siphonophores.

No abstract available.

AD-A065 288/3GA PC **A15**/MF **A01**
Naval Underwater Systems Center, Newport, RI.
Generic Sonar Model.
Technical document,
Henry Weinberg. 1 Jan 79, 344p Rept no. NUSC-TD-5971

Descriptors: *Sonar, Computer programs, Ocean environments, Computerized simulation, Ocean models, Sonar signals, Underwater sound, Acoustic velocity, Sea water, Acoustic scattering, Salinity, Acoustic reflection, Reverberation, Fortran, Cost analysis, Trade off analyses, War games, Test facilities, Simulators.
Identifiers: Generic Sonar Model computer program, Performance evaluation, Mthematical models.

The Generic Sonar Model is a computer program designed to provide sonar system developers and technologists with a comprehensive modeling capability for evaluating the performance of sonar systems and investigating the ocean environment in which they operate. The Generic Sonar Model provides features not presently available in any one computer program. These permit cost/accuracy tradeoffs for specific applications and interfacing results with generalized warfare models and hardware stimulators in development and test bed facilities. (Author)

17B. Communication

AD-A064 875/8GA PC **A03**/MF **A01**
Naval Postgraduate School, Monterey, CA.
Channel Blocking in a Satellite Communication System Model.
Technical rept.,
D. P. Gaver, and John P. Lehoczky. Oct 78, 38p
Rept no. NPS-55-78-025

Descriptors: *Space communications, *Communication satellite terminals, *Communications traffic, Communication satellites, Mathematical models, Queueing theory, Poisson equation, Distribution functions, Markov processes, Multivariate analysis, Communications networks, Systems analysis.
Identifiers: Satellite communications.

A model is constructed for a communication system that involves a single satellite and many ground stations. The probability that messages are blocked is studied. (Author)

AD-A064 936/8GA PC **A04**/MF **A01**
Western Union Telegraph Co., McLean, VA. System Engineering Dept.
Initial AUTODIN II Segment Interface Protocol (SIP) Specification.
Technical note,
V. R. Kulkarni, and P. J. Sevcik. 3 Oct 78, 70p
TN-78-07.2, AD-E100 107
Contract DCA200-C-637

Descriptors: *Communications networks, *Telecommunication, *Data links, *Switching, Data transmission systems, Digital systems, Interfaces, Access, Input output processing, Secure communications, Specifications.
Identifiers: *AUTODIN, Data communications protocol, AUTODIN-2.

This document provides the functional specification for the AUTODIN II Segment Interface Protocol (SIP) in the abstract sense. It describes the externally (to the host) visible and mandatory portions of the SIP. It describes the protocol commands and formats, and the prescribed state transition stimuli and responses. (Author)

AD-A065 033/3GA PC **A02**/MF **A01**
Massachusetts Inst., of Tech., Lexington. Lincoln Lab.
Real-Time Harmonic Pitch Detector.
Journal article,
Stephanie Seneff. 22 Jun 77, 9p JA-4707, ESD-TR-78-351
Contract F19628-78-C-0002, ARPA Order-2006
Availability: Pub. in IEEE Transactions on Acoustics, Speech and Signal Processing, vASSP-26 n4 p358-365 Aug 78.

Descriptors: *Speech recognition, *Pitch discrimination, Digital systems, Real time, Harmonic analyzers, Algorithms, Noise reduction, Reprints.

No abstract available.

AD-A065 035/8GA PC **A02**/MF **A01**
Massachusetts Inst. of Tech., Lexington. Lincoln Lab.
Fractional Speech Loss and Talker Activity Model for TASI and for Packet-Switched Speech.
Journal article,
Clifford J. Weinstein. 1 Aug 77, 6p JA-4771, ESD-TR-78-353
Contract F19628-78-C-0002, ARPA Order-2006
Availability: Pub. in IEEE Transactions on Communications, vCOM-26 n8 p1253-1257 Aug 78.

Descriptors: *Speech analysis, *Pulse communications, Input output models, Transmission loss, Markov processes, Interpolation, Electronic switching, Reprints.
Identifiers: Packet switching.

No abstract available.

AD-A065 058/0GA PC **A03**/MF **A01**
Cincinnati Electronics Corp., OH.
Vehicular Intercommunication System.
Final rept. 30 Sep 77-31 Oct 78,
C. F. Wedaman. Feb 79, 34p CORADCOM-77-0190-F

Contract DAAB07-77-C-0190

Descriptors: *Intercommunication systems, *Transmitter receivers, *Microwave communications, *Time division multiplexing, *Radio links, Tracked vehicles, Military vehicles, Frequency modulation, Frequency division multiplexing, Voice communications, Tanks(Combat vehicles), Armored personnel carriers, Costs, Reduction, Low frequency, L band, Earphones, Microphones.

This is the final report for the design study of a vehicular intercommunication system primarily used in tracked vehicles. The report presents conclusions based on study efforts conducted from 30 September 1977 to 31 October 1978. A system which meets development specification, DS-AF-0246A(A), dated 14 February 1977, is discussed. (Author)

AD-A065 063/0GA PC **A03**/MF **A01**
Massachusetts Inst. of Tech., Lexington. Lincoln Lab.
A Study of Future Directions for Low Rate Speech Processor Research, Development, and Implementation.
Technical note,
Bernard Gold, Jack I. Raffel, and Theodore Bially. 15 Nov 78, 43p TN-1978-43, ESD-TR-78-284
Contract F19628-78-C-0002, ARPA Order-2006

Descriptors: *Speech, *Voice communications, Vocoders, Processing, Digital systems, Low costs, Algorithms.

The objective of the study was to relate device technology developments to voice terminal concepts and designs, in order to better understand the steps that would eventually lead to very small and inexpensive narrowband terminal implementations. The overall conclusion derived from this effort can be summarized as follows: Given the present and near future advances in technology it is predictable that present-day vocoder algorithms will soon be implementable as low cost compact devices. How soon this comes to pass does not depend on any new technological breakthroughs but rather on the direction of investments in LSI development realizable with present device technology. Future systems will require terminal capabilities that exceed those of current designs, and these will result in commensurately more complex hardware implementations.

AD-A065 066/3GA PC **A02**/MF **A01**
Riverside Research Inst., New York.
Heterodyne Detection of Random Gaussian Signals in the Optical and Infrared: Optimization of Pulse Duration,
Marek Elbaum, and Malvin Carl Teich. 21 Jul 78, 5p
Contracts DAAK40-76-C-0500, DAAG29-77-C-0019
Prepared in cooperation with Columbia Radiation Lab., New York. Dept. of Electrical and Computer Science.
Availability: Pub. in Optics Communications, v27 n2 p257-261 Nov 78.

Descriptors: *Optical communications, Transfer functions, Pulse modulation, Heterodyning, Optimization, Optical detection, Figure of merit, Reprints.

No abstract available.

AD-A065 099/4GA PC **A02**/MF **A01**
Electronics Engineering Group (1842nd), Scott AFB, IL.
Induced Voltage/Lightning Problems at USAF Brandywine and Davidsonville Sites.
Technical rept.,
Remo Vinassa, and John F. Zych. Jan 79, 14p
Rept no. 1842-EEG/EEIS-TR-79-2

Descriptors: *Lightning arresters, *Communication equipment, *Protective equipment, Transients, Electromagnetic induction, Overload, Vulnerability, Air Force facilities, Schematic diagrams.

As a result of the survey performed at subject USAF sites, recommendations are made to decrease vulnerability to lightning which have been destroying communication equipment components. (Author)

AD-A065 160/4GA PC **A99**/MF **A01**
Texas Instruments, Inc., Dallas.
Total Voice Speaker Verification.
Final technical rept. Jul 76-May 78,
Robert L. Davis, Barbara M. Hydrick, and George R. Doddington. Jan 79, 5124p RADC-TR-78-260
Contract F30602-76-C-0329

Descriptors: *Speech analysis, *Identification systems, *Pattern recognition, *Signal processing, Digital computers, Males, Females, Acoustic filters, Iterations, Algorithms, Optimization, Clustering, Errors, Sequences.
Identifiers: Speaker verification, Voice authentication, Word recognition, Digit recognition, Sequence recognition.

The objective of this resarch has been to develop a robust speaker-independent, connected digit-sequence recognition capability as the front-end for a speaker verification(voice authentication) program and to install and demonstrate that capability on the Base and Installation Security System Advanced Development Model for speaker verification located at RADC. In such a system, the correct digit sequence recognition provides the user identification of the claimed identity. Verification is then performed on the same speech data. This total-voice system must recognize connected digits independent of speaker with high reliability. Two sequence constraints aid recognition: two parity checks must be satisfied, and difficult digit pairs were disallowed. A further sequence constraint added to aid verification was that all digits must be different. The selected constraints yield 320 possible sequences. The speech processing strategy features highly reliable time registration and accommodates multiple concurrent hypotheses at various processing levels. Basic to robust speaker-independent recognition is the existence of a set of reference patterns capable of allowing for the speaker's sex and dialect. Rather than arbitrary segmentation of the design data to produce reference patterns, a hierarchical clustering algorithm was used, followed by an iterative optimization procedure.

AD-A065 354/3GA PC **A05**/MF **A01**
Defense Communications Engineering Center, Reston, VA.
Design Objectives for DCS LOS Digital Radio Links.
Engineering publication,
Deane E. Parker. Dec 77, 83p DCEC-EP-27-77, AD-E100 170

Descriptors: *Radio links, *Radio transmission, *Fading(Electromagnetic waves), Line of sight, Troposphere, Probability, Voice communications, Digital systems, Data transmission systems, Threshold effects, Performance(Engineering), Reliability, Department of Defense.
Identifiers: Defense communications system, Design, Pulse communication.

This report presents the design objectives for DCS LOS Digital Radio links and a design procedure for determining system parameters to meet these design objectives. The design objectives are presented as probability of fade outage on a LOS link and link margin requirements to meet this fade outage probability. (Author)

AD-A065 421/0GA PC **A99**/MF **A01**
SRI International, Menlo Park, CA. Network Information Center.
ARPANET Resource Handbook,
Elizabeth J. Feinler, Johanna M. Landsbergen, and Adrian C. McGinnis. Oct 78, 1033p NIC-45601, AD-E100 173
Contract DCA200-C-641
Supersedes Rept. No. NIC-39335, AD-A040 452.

Descriptors: *Computer communications, *Communications networks, Department of Defense, Intercommunication systems, Time sharing, Information systems, Information processing, Digital computers, Packets, Handbooks, Directories, Manuals, Data processing terminals, Message processing.
Identifiers: *ARPA Computer Network, Computer networks, Interequipment communications, Packet switching, ARPANET, Pulse communication.

The ARPANET is an operational, computerized, packet switching DoD digital network which provides a capability for terminals or geographically separated computers, called hosts, to communicate with each other. The host computers often differ from one another in type, speed, word length, operating system, and other characteristics. Each terminal or host computer is connected into the network through a small local node computer called an IMP or TIP. The complete network is formed by interconnecting the IMPs through wideband communication lines (normally 50,000 bits per second) supplied by common carriers. This handbook is a compendium of resources available for use on the ARPANET. Enough descriptive procedure is included to permit a user to find and access many of these resources. In addition, the handbook contains general information about the ARPANET, lists useful network contacts, and cites bibliographic references and online documentation. It is aimed toward the novice user or the network user who may not be familiar with hosts (computers) other than his own. Although the handbook attempts to provide enough information to guide the user around the ARPANET, it does not attempt to provide in depth descriptions of software, hardware configurations, operating systems, and the like.

AD-A065 449/1GA PC **A04**/MF **A01**
Massachusetts Inst. of Tech., Lexington. Lincoln Lab.
Data Traffic Performance of an Integrated Circuit- and Packet-Switched Multiplex Structure.
Technical note,
Clifford J. Weinstein, Marilyn L. Malpass, and Martin J. Fischer. 26 Oct 78, 59p TN-1978-41, ESD-TR-78-276
Contract F19628-78-C-0002

Descriptors: *Time division multiplexing, *Data transmission systems, *Switching circuits, *Voice communications, Queueing theory, Integrated circuits, Message processing, systems engineering, Simulation, Delay.
Identifiers: Packet switching, Data traffic, Voice switching, Data buffers, Data packets, Voice traffic, Poisson processes.

New results are presented for data traffic performance in an integrated multiplex structure which includes circuit-switching for voice and packet-switching for data. The results are developed both through simulation and analysis, and show that excessive data queues and delays will build up under heavy loading conditions. These large data delays occur during periods of time when the voice traffic load through the multiplexer exceeds its statistical average. A variety of flow control mechanisms to reduce data packet delays are investigated. These mechanisms include control of voice bit rate, limitation of the data buffer, and combinations of voice rate and data buffer control. Simulations indicate that these flow control mechanisms are quite effective in improving system performance. A combination of data buffer limitation with data-queue-dependent voice rate control was the most effective flow control technique tested. (Author)

N79-19189/6GA PC **A08**/MF **A01**
Axiomatix, Los Angeles, CA.
Shuttle Ku-Band and S-Band Communications Implementations Study.
Final Report.
G. K. Huth, T. Nessibou, P. W. Nilsen, M. K. Simon, and C. L. Weber. 28 Feb 79, 160p NASA-CR-160127, R7902-3
Contract NAS9-15240

Descriptors: *Communication networks, *Space shuttles, *Superhigh frequencies, Communication equipment, Payloads, Space shuttle orbiters, Ultrahigh frequencies.
Identifiers: Microwave communication, Ku band, S band, Interfaces, *Space communication.

For abstract, see STAR 1710

N79-19190/4GA PC **A09**/MF **A01**
Axiomatix, Los Angeles, CA.

Shuttle Payload S-Band Communications Study.
Final Report.
J. C. Springett. 9 Mar 79, 196p NASA-CR-160136, R7903-1
Contract NAS9-15240

Descriptors: *Payloads, *Space shuttles, *Superhigh frequencies, Mission planning, Signal processing, Space shuttle orbiters, Telemetry, Tradeoffs, Ultrahigh frequencies.
Identifiers: Microwave communication, *Space communicaton, S band.

For abstract, see STAR 1710

N79-19193/8GA PC **A02**/MF **A01**
Communications Research Centre, Ottawa (Ontario). Space Technology and Applications Branch.
Forward Error-Correction for the Aeronautical Satellite Communications Channel.
A. Sewards, L. Beaudet, and H. Ahmed. Feb 79, 20p CRC-TN-698
Conf-Presented at AGARD Symp. On Digital Communications in Avionics, Jun. 1978.

Descriptors: *Aeronautical satellites, *Channels (Data transmission), *Error correcting codes, *Ground-air-ground communications, *Satellite transmission, Data links, Error signals, Multipath transmission, Ocean surface, Radio frequency interference, Ultrahigh frequencies.
Identifiers: Canada, L band, Data transmission.

For abstract, see STAR 1710

N79-19587/1GA PC **A04**/MF **A01**
Computer Sciences Corp., Silver Spring, MD.
A Survey of Potential Users of the High Altitude Powered Platform (HAPP) in the Ocean/Coastal Zone Community.
Final Report.
D. Escoe, and P. Rigternik. Mar 79, 67p NASA-CR-156852, CSC/TM-78/6331
Contract NAS6-2369

Descriptors: *Coasts, *High altitude balloons, *Ocean data acquisitions systems, Surveys, Data acquisition, Oceanography, Remotely piloted vehicles, User requirements.
Identifiers: Telecommunication.

For abstract, see STAR 1710

PB-292 898/4GA PC **A05**/MF **A01**
Academy for Educational Development, Washington, DC. Clearinghouse on Development Communication.
A Sourcebook on Radio's Role in Development,
Peter Spain, Judith Yarborough, and Emily Raskin. 1976, 91p IB-7
Sponsored in part by Agency for International Development, Washington, DC.

Descriptors: *Radio communication, *Bibliographies, Research, Research projects, Management planning, Strategy, Technology innovation.
Identifiers: Developing country application.

A worldwide renaissance of interest in radio is underway. In this document the attempt has been made to supply as much information as possible on information sources. There are six hundred entries, the majority of which have been annotated, and some have been abstracted. The booklet is divided into three areas which include the type of document, issues, and strategies.

PB-292 933/9GA PC **A05**/MF **A01**
RCA Government Communications Systems, Camden, NJ.
EMS(Electronic Message Service) - System Definition and Evaluation. Executive Summary.
Rept. for May 76-Dec 78.
31 Dec 78, 79p*
Contract USPS-104239-76-X-1675
See also Final rept., PB-292 934.

Descriptors: *Mail, Telecommunication, Evaluation, Requirements, Benefit cost analysis, Economic analysis, Systems analysis.
Identifiers: *Electronic message systems, Computer applications, Postal service, Electronic mail.

The report provides an Executive Summary of the EMS-Definition and Evaluation Final Report which defines an Electronic Message Service System for the United States Postal Service and covers the system requirements, design concept, cost projections and economic analysis over the growth of the system. The results show there are adequate technical solutions and attractive systems for Postal Electronic Message Services.

PB-292 934/7GA PC **A09**/MF **A01**
RCA Government Communications Systems, Camden, NJ.
EMS(Electronic Message Service) - System Definition and Evaluation. Final Report.
Rept. for May 76-Dec 78.
31 Dec 78, 197p*
Contract USPS-104230-76-X-1675
See also PB-292 933.

Descriptors: *Mail, Telecommunication, Evaluation, Requirements, Benefit cost analysis, Economic analysis, Systems analysis.
Identifiers: *Electronic message systems, Electronic mail, Computer applications, Postal service.

The report defines an Electronic Message Service System for the United States Postal Service and covers the system requirements, design concept, cost projections, and economic analysis over the growth of the system. The results show there are adequate technical solutions and attractive systems for Postal Electronic Message Services.

PB-292 967/7GA PC **A05**/MF **A01**
National Engineering Lab. (NBS), Washington, DC. Acoustical Engineering Div.
Microphone Windscreen Performance.
Final rept.,
Robert N. Hosier, and Paul R. Donavan. Jan 79, 85p NBSIR-79-1599
Sponsored in part by Environmental Protection Agency, Washington, DC. Office of Noise Abatement and Control.

Descriptors: *Microphones, *Shielding, *Noise reduction, Performance, Wind(Meteorology), Noise(Sound), Insertion loss, Polyester resins, Spheres, Foam, Protectors, Tables.
Identifiers: *Windscreens.

Measurements were made of the wind-induced noise and acoustic insertion loss of ten microphone windscreens. Eight of these were reticulated polyester spheres of varying porosity. The other two were the metal cage type typically used in long term outdoor noise monitoring. The measurements were made under laboratory conditions for normal and grazing flow incidence at wind speeds up to 14 m/sec. The data show that the windscreens are very different in the amount of wind-induced noise reduction they provide, with some achieving more than 25 dB. In general the foam windscreens provided more wind-induced noise reduction than the cage windscreens; however, the cylindrical cage windscreen performed better than any of the foam windscreens for normal flow incidence. The insertion loss measurements proved difficult to make because of the small insertion losses encountered. However, data for grazing flow and normal acoustic incidence show no strong velocity dependence for any of the windscreens tested. Examination of the wind-induced noise spectra provided significant insight into the noise generating mechanisms associated with flow around a porous sphere. Effects of inflow turbulence, self-generated turbulence, mean flow, flow through the sphere, and flow incidence angle were identified. Test results are provided in the form of curves and tables for easy use in evaluating potential wind noise levels in outdoor measurements.

PB-292 987/5GA CP **T03**
Federal Communications Commission, Washington, DC. Data Automation Div.
Trunk Distribution Physical System Data File.
Data file,
John Giuli, and Jack Sharkey. Feb 79, mag tape FCC/DF-79/006
Supersedes rept. no. FCC/DF-77/012, PB-267 776.
Source tape is in EBCDIC character set. Tapes can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions.

Descriptors: *Data file, *Closed circuit television, Telecommunication, Distribution systems, Magnetic tapes.
Identifiers: Cable television.

The Trunk Distribution File, also referred to as the Physical System File, contains information concerning signal carriage and services provided by Cable Television systems to user communities. The file is a sequential tape file sorted in ascending order on its first eight characters (Physical System ID). The data on the file consists of record key, community units served, signals carried, and services provided. This data is captured mainly from FCC Forms 325, 326 and 327. The community unit codes (positions 91-180) correspond to records on the Community Unit File. The call signs in the signal carriage fields (positions 209-733) correspond to records on the TV Station file. The file is continuously updated and no end of cycle copies are maintained. There are 4,700 records of 996 characters each in the file.

PB-292 988/3GA CP **T04**
Federal Communications Commission, Washington, DC. Data Automation Div.
Cable Television Community Unit, Station and Mail Address Data File.
Data file,
Jack J. Sharkey. Feb 79, mag tape* FCC/DF-79/005
Supersedes rept. no. FCC/DF-78/001, PB-276 704.
Source tape is in EBCDIC character set. Tapes can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions.

Descriptors: *Data file, *Closed circuit television, Licenses, Television stations, Magnetic tapes.
Identifiers: Cable television.

File No. 1--The Cable Television Community Unit File contains data for each community served by each cable television system (franchise), including the call sign for each TV station (up to 30) whose programming is distributed via the system. The address (no zip code) of the local community operating facility is available in each record; however, the business mailing address of the parent cable television system is not present but is available via linkage to the associated Cable Television Mail Address File. Additional data relative to participating TV stations is available via linkage to the associated Cable Television TV Station File. File one contains 11,525 records of 1,176 characters each. File No. 2--The Cable Television Station File contains data for each U.S. TV broadcast station and those Canadian and Mexican TV stations likely to be carried on U.S. Cable Television Systems. Records reflect data for batch current and past call signs; records for those call signs that have been replaced by a new call sign contain the new call sign. Station data is limited to call sign, effective/termination dates, channel number, city, state, TV network, and station specifics. This file is a subsidiary file of the Cable Television Community Unit File. File two contains 2073 records of 212 characters each. File No. 3--The Cable Television Mail Address File contains the business mailing address for each major cable television entity, but does not contain the name of the entity. This file is a subsidiary file of the Cable Television Community Unit file as well as other cable television data bases. File three contains 3470 records of 60 characters each.

17D. Electromagnetic and Acoustic Countermeasures

AD-A065 006/9GA PC **A03**/MF **A01**
Utah State Univ., Logan. Center for Atmospheric and Space Sciences.
Study of Radiative Scattering Concept of Plume Infrared Radiation Obscuration.
Final rept. 1 Aug 77-30 Oct 78,

R. D. Harris, Keith O'Dell, G. G. Pippin, Stephen J. Young, and L. R. Martin. Dec 78, 37p AFOSR-TR-79-0039
Contract F49620-77-C-0121
Prepared in cooperation with Aerospace Corp., El Segundo, CA.

Descriptors: *Radiation absorption, *Infrared radiation, *Aerosols, *Absorption coefficients, Carbon, Nitric acid, Titanium dioxide, Synergism, Obscuration, Exhaust plumes, Jet engine exhaust, Mie scattering.
Identifiers: *Infrared countermeasures.

Theoretical and experimental studies were performed to measure the synergistic absorption of hot-gas radiation by an aerosol/absorbing gas mixture and to verify quantitatively the infrared absorption of carbon particles. Computer calculations for a pure scatterer/N2O absorbing gas mixture revealed a synergistic effect of only 10%. In carbon - N2O mixtures, synergism was negligible. Attenuation measurements were made for pure carbon and TiO2 aerosols, pure N2O samples, and the combination of each aerosol in N2O. In all cases, the net transmittance of the gas/aerosol was described by the simple product of the N2O alone and aerosol transmittances. No synergism were detected. Transmission calculations for carbon show it a very effective candidate for plume obscuration. (Author)

NTIS/PS-79/0402/2GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Electronic Countermeasures and Electronic Counter Countermeasures. Volume 2. May, 1977-March, 1979 (A Bibliography with Abstracts).
Rept. for May 77-Mar 79,
William E. Reed. May 79, 163p
Supersedes NTIS/PS-78/0337, NTIS/PS-77/0306, NTIS/PS-76/0330, and NTIS/PS-75/165. See also Volume 1, 1964-April, 1977, NTIS/PS-78/0336.

Descriptors: *Bibliographies, *Electronic countermeasures, *Electronic countercountermeasures, Jamming, Antijamming, Antiradar coatings, Electronic jammers, Deception, Countermeasures, Abstracts.

Methods and equipment for active and passive systems are presented in these research reports. Topics include electronic warfare, radar and radio jamming, antijamming, antiradar materials, and deception. (This updated bibliography contains 155 abstracts, 76 of which are new entries to the previous edition.)

17E. Infrared and Ultraviolet Detection

AD-A064 857/6GA PC **A03**/MF **A01**
Missouri Univ.-Rolla.
Cloud Chamber Infrared Measurements.
Final rept.,
Daniel R. White. Jan 78, 43p
Contract DAAK70-76-C-0246

Descriptors: Infrared radiation, Night vision devices, Simulation, Clouds, Fog, Construction, Computer aided design, Aerosols, Air flow, Manifolds(Engines).
Identifiers: *Environment simulators, Clouds(Meteorology).

During the report period, the design of the simulation chamber was established, initial thermal tests were conducted, and a study of the procedure for making the desired IR attenuation and scattering measurements was made. Limitations of both time and funds have not permitted the project to be carried through to the point of making actual IR measurements. The project is being continued subject to available funding from a variety of sources.

AD-A064 865/9GA PC **A04**/MF **A01**
Naval Postgraduate School, Monterey, CA.
Advanced Infrared Detectors for Future Missile Seekers.
Master's thesis,
Richard Alan Fantauzzo. Dec 78, 66p

Descriptors: *Infrared detectors, Semiconductors, Lead compounds, Sulfur compounds, Selenides, P type semiconductors, N type semiconductors, Epitaxial growth, Semiconducting films, Guided missile tracking systems, Transport properties, Target signatures, Vacuum deposition, Optical properties, Theses.
Identifiers: *Homing, Missiles, Barium fluorides, Lead sulfides, Lead selenides.

New technology was utilized to design and fabricate a self-filtering infrared detector (SFD) optimized for a specific target signature. The SFD was prepared from vacuum deposited, composition-tuned epitaxial films of the semiconductor alloy, PbS(x)Se(1-x). A filter and detector layer were both grown on opposite sides of a BaF2 substrate. The detector element was a p-n junction formed by depositing a Pb contact onto a p-type detector layer surrounded by a Au ohmic contact.

AD-A065 051/5GA MF **A01**
Rome Air Development Center, Hanscom AFB, MA. Deputy for Electronic Technology.
Evaluation of a Schottky IRCCD Staring Mosaic Focal Plane,
B. Capone, L. Skolnik, R. Taylor, F. Shepherd, and S. Roosild. 1978, 14p Rept no. RADC/ETR-79-0001
Prepared in cooperation with RCA Sarnoff Labs., Princeton, NJ.
Availability: Microfiche copies only. Pub. in SPIE, v156 p120-131 1978.

Descriptors: *Infrared detectors, *Charge coupled devices, *Schottky barrier devices, Mosaics(Light Sensitive), Photodiodes, Focusing, Reprints.
Identifiers: Platinum silicides.

No abstract available.

AD-A065 404/6GA PC **A06**/MF **A01**
Battelle Columbus Labs., OH.
Atmospheric Effects on Imaging Seekers.
Technical rept. for period ending FY78,
L. J. Pinson. Jul 78, 104p DRDMI-T-CR-79-2
Contract DAAG29-76-D-0100
Prepared in cooperation with Auburn Univ., AL.

Descriptors: *Optical images, Atmosphere models, Infrared images, Meteorological data, Maxwells equations, Light scattering, Thermodynamics, Mathematical models.
Identifiers: Lenses, Greens function, Optical equipment, Modulation transfer functions, Atmospheric attenuation.

The major body of knowledge about the effects of the atmosphere on optical radiation is best described by a small number of primary references. One goal of this effort was to establish a list of these primary references which are in the bibliography. Further, specific atmospheric effects are presented in summary form. An alternative objective was to identify deficiencies in the theoretical development as related specifically to imaging seeker applications. This was accomplished through comparison of assumptions and approximation made in the theoretical development with expected conditions for the seeker. A detailed theoretical development based on Maxwell's equations in a slightly inhomogeneous, weakly absorbing medium is given which describes the optical properties of the atmosphere. From the resultant atmospheric Green's function, the propagation of complex spatial optical amplitude functions from the object to the image plane of a simple lens is given. The atmosphere-lens modulation transfer function (MTF) is then computed from the spatial Fourier transform of the optical intensity function in the image plane. Contrast in the image plane is computed in terms of the definitions for universal and modulation contrast using the image plane intensity and adding a term for ambient irradiance. The theory as developed gives a rigorous treatment of the contrast transfer and MTF of an atmosphere-lens imaging system for the monochromatic case. It remains to extend the model to give contrast and MTF for the broadband case. (Author)

AD-A065 465/7GA PC **A02**/MF **A01**
Defence Research Establishment, Valcartier (Quebec).
An Infrared Thermal Imaging System with a Digital Scan Converter,
B. Montminy, P. Cote, and R. Carbonneau. Jan 79, 20p Rept no. DREV-R-4133/79
Abstract in French.

Descriptors: *Infrared images, *Image processing, Computer applications, Infrared scanning, Infrared vidicons, Converters, Digital systems, Tape recorders, Display systems, Canada.

This report describes a thermal imaging system consisting of an IR camera, a digital scan converter, an X-Y display monitor and a digital tape recorder. The system can be used for recording and studying IR images in the 3- to 5-micrometer and 8- to 14-micrometer wavelength bands. It can also be used as an interface system for computer processing of images. (Author)

17G. Navigation and Guidance

AD-A064 907/9GA PC **A05**/MF **A01**
Facility Checking Squadron (1868th) (AFCS), APO New York 09057.
TRACALS Evaluation Report. TACAN Station Evaluation Report. RAF Mildenhall, United Kingdom.
Final rept.,
John D. Collier. 27 Dec 78, 92p Rept no. 78-68-T-33

Descriptors: *Airport radar systems, *TACAN, Performance(Engineering), Limitations, Area coverage, Terrain masking, Surveys, Transponders, Range(Distance), Confidence limits, Military facilities, Great Britain.
Identifiers: *Tracals Project, AN/GRA-120, AN/GRN-20, Antennas, Receivers.

This Traffic Control and Landing Systems (TRACALS) station evaluation report presents the analysis of data collected to define the capabilities and limitations of the AN/GRN-200 tactical air navigation (TACAN) system with an AN/GRA-120 antenna and associated power equipment at RAF Mildenhall, United Kingdom, during 13-19 July 1978. The report defines the theoretical coverage limits of the TACAN in the siting environment. The airborne evaluation results are presented to define azimuth and DME accuracy, the extent of useable coverage, the interference field pattern, and the quality of course structure. The data presented in this report can be used as a valid guide to anticipated performance until there is a significant change in the ground equipment or in the horizon screening. (Author)

AD-A064 909/5GA PC **A05**/MF **A01**
Federal Aviation Administration, Washington, DC. Systems Research and Development Service.
Engineering and Development Program Plan. Terminal/Tower Control.
Rept. for 1978-1982.
Nov 78, 94p Rept no. FAA-ED-14-2A
Supersedes Rept. no. FAA-ED-14-2 dated Apr 73, AD-772 746. See also AD-A051 621.

Descriptors: *Airport control towers, *Air traffic control systems, *Airport radar systems, Radar beacons, Systems engineering, Planning, Display systems, Automation, Air traffic control terminal areas, Data processing, Data links.
Identifiers: Automated radar terminal system.

This document sets forth the engineering and development plan for FAA E/D Program 14: TERMINAL/TOWER CONTROL. The plan covers the relationship of Program 14 to the overall E/D effort, defines the purpose, scope and direction of the program, and describes the major technical elements of the program. The plan is intended to provide guidance to personnel charged with carrying out development activities under Program 14 and to provide a tool for the continuing management and control of these activities. The plan will also serve as a basis for estimating the funds required and for seeking approval of budgets. (Author)

AD-A064 942/6GA PC **A05**/MF **A01**
Northwestern Univ., Evanston, IL. Dept. of Mechanical Engineering.
Optimal Control of Systems with Uncertainty.
Interim rept. Sep 77-Aug 78,

W. E. Schmitendorf. 1978, 83p AFOSR-TR-78-1536
Grant AFOSR-76-2923

Descriptors: *Targeting, *Control systems, Optimization, Minimax technique, Linear systems, Steering, Dynamics, Control theory.

The research being performed under AFOSR Grant 76-2923 is concerned with optimally controlling a system to a specified target when disturbances or uncertainties enter the system. Two general problems in this area are being investigated. One problem is that of determining if there exists a control that assures that the system reaches a specified target set for all possible disturbances. If such a control exists, then the next problem is to determine a control which guarantees that the target is reached and it also optimal in the sense of minimizing a specified measure of the system's performance. Our research effort has been directed toward obtaining methods for answering the questions raised by these problems and thereby aiding in the design of controllers for uncertain systems. (Author)

AD-A065 027/5GA PC **A05**/MF **A01**
Naval Ocean Systems Center, San Diego, CA.
Omega Possibilities.: Limitations, Options, and Opportunities.
Final rept. Jan-Jul 78,
E. R. Swanson, J. E. Britt, and A. N. Smith. 23 Jun 78, 86p Rept no. NOSC/TR-283

Descriptors: *Omega navigation, Performance(Engineering), Limitations, Modification, Area coverage, Electromagnetic interference, Radio receivers, Sensitivity, Very low frequency.

Omega is reviewed from the vantage point of several years operational experience with the system in nearly final configuration. After identification of some possible shortcomings or deficiencies, system design parameters are re-examined with a view to determining possible investigations, modifications, or changes which might mitigate or lead to elimination of difficulties. The primary form of review is a re-examination of design in hindsight using modern theory and considering modern engineering options to determine weaknesses and areas susceptible to improvement. Potential coverage limitations were identified in several areas while a coverage deficiency in central North America is to be expected. Significant reception difficulties have been noted in aircraft. Specific recommendations are made for investigations leading to improved receiver design and to mitigate reception problems in aircraft. Despite system maturity, a considerable and perhaps surprising latitude exists for modifications. Methods are presented by which one or more additional stations can be added without obsoleting existing equipments. (Author)

AD-A065 054/9GA PC **A04**/MF **A01**
Facility Checking Squadron (1866th) (AFCS), Scott AFB, IL.
Radar Station Evaluation Report Torrejon AB, Spain.
Final rept.,
Earl T. Pinney, Jr. 18 Jan 79, 65p Rept no. 78/66R-145

Descriptors: *Airport radar systems, Radar beacons, Perimeter acquisition radar, Ground controlled approach radar, Radar antennas, Performance(Engineering), Moving target indicators, Limitations, Terrain masking, Surveys, Range(Distance), Confidence limits, Air Force facilities, Spain.
Identifiers: Tracals project, AN/GPA-123, AN/TPX-42, AN/MPN-14, Torrejon Air Base.

This radar station evaluation report presents data collected from 7-21 November 1978 to define the capabilities and limitations of the GCA facility at Torrejon AB, Spain. This report includes descriptions of the useable ASR and PAR coverage and tracking capabilities, analysis of all flight and equipment performance data, and the performance predictions for each system. The data presented can be used as a guide for anticipated equipment performance until there is an addition, deletion, or relocation of equipment, or until a significant change occurs in the horizontal profile. (Author)

AD-A065 296/6GA PC **A05**/MF **A01**
Federal Aviation Administration, Washington, DC. Systems Research and Development Service.
Flight Tests of a Low-Cost Omega Navigation Receiver.
Final rept.,
Robert Moore. Jun 77, 76p FAA-RD-77-70, GIDEP-E093-2458

Descriptors: *Omega navigation, *Receivers, Navigational aids, Very low frequency, Global, Specifications, Flight testing, Low costs, Transmission loss, Signal to noise ratio.
Identifiers: *Mark-3 Omega navigation receivers.

This report describes flight tests performed to investigate the feasibility of using low-cost Omega avionics for enroute navigation, and to assess Omega navigation as a supplement to VOR/DME in remote areas. Tested was a prototype Mark III Omega receiver. Results indicate that low-cost Omega avionics provides acceptable guidance during quiescent propagation periods. Flights during diurnal transition periods of the day would require compensation for anticipated phase changes. There were no indications of terrain sensitivity at the minimum enroute altitudes flown.

AD-A065 467/3GA PC **A04**/MF **A01**
Army Missile Research and Development Command, Redstone Arsenal, AL. Technology Lab.
Preliminary Analysis of Automatic Scene Correlation Between Spectrally Non-Compatible Imagery.
Technical rept.,
William W. Malcolm, and Joseph S. Boland, III. 11 Oct 78, 55p Rept no. DRDMI-T-78-85

Descriptors: *Target acquisition, *Weapon delivery, *Terminal homing, *Infrared detectors, Long range(Distance), Infrared homing, High resolution, Edges, Air to surface missiles, Correlation guidance, Attack helicopters, Threshold effects, Television systems.

A concept which might be utilized in the development of a modern attack helicopter weapon system could combine a target acquisition system and air-launched terminal homing missile to provide the capability for long range target engagement. If a laser semi-active system is employed, continuous laser designation would be required from missile launch to impact. This would increase the helicopter exposure and vulnerability to anti-aircraft weapons. (Author)

AD-A065 499/6GA PC **A03**/MF **A01**
Charles Stark Draper Lab., Inc., Cambridge, MA.
Materials Research for Advanced Inertial Instrumentation. Task 1: Dimensional Stability of Gyro Structural Materials.
Technical rept. no. 1, 1 Oct 77-30 Sep 78,
J. McCarthy, and F. Petri. Feb 79, 48p Rept no. R-1231
Contract N00014-77-C-0388
See also Task 2, AD-A061 775.

Descriptors: *Beryllium, *Stainless steel, *Aluminum alloys, *Mechanical properties, Gyroscopes, Precision finishing, Instrumentation, Finite element analysis, Hot pressing, Isostatic pressing, Creep strength, Strain(Mechanics), Yield strength, Composite structures.
Identifiers: Aluminum Alloy 2014, Aluminum Alloy A356, Aluminum Alloy 6061, Aluminum Alloy 2024.

The literature is reviewed for micromechanical property data for materials used in precision instruments. Microyield strength and microcreep values are presented for general aluminum alloys, 440C stainless steel, and instrument grade beryllium. A method for applying finite element analysis techniques in conjunction with empirical data for instrument grade beryllium to predict micromechanical behavior of instrument components is discussed. A simple component configuration for experimental verification of the prediction technique is presented. The application of finite element techniques to the design of a composite microcreep specimen is presented. The results of preliminary work on studies of micromechanical properties of hot isostatically pressed beryllium are presented. Test specimen preparation, microstrain instrumentation, and problems of alignment of loading are discussed. (Author)

17H. Optical Detection

AD-A064 847/7GA PC **A05**/MF **A01**
Electronic Vision Co., San Diego, CA.
ICCD Electron Damage Investigation.
Final rept. 1 Apr 77-21 Jul 78,
Robert Sinaven, G. Hall, and L. Acton. 24 Jul 78, 89p SAI-78-788-EVC, SAMSO-TR-79-2
Contract F04701-76-C-0123
Availability: Microfiche copies only.

Descriptors: *Optical detection, *Charge coupled devices, *Image tubes, *Image intensifiers(Electronics), Photocathodes, Signal to noise ratio, Electron beams, Radiation damage, Life expectancy, Darkness, Annealing, Clocks, Photosensitivity, Spaceborne.
Identifiers: Intensified charge coupled devices, Responsivity, Pixels, Ultraviolet annealing, Electron bombardment annealing, Electron damage, Backside illumination, Electron sensitivity, Clock voltages.

The operational lifetime of an Intensified Charge Coupled Device (ICCD) utilizing a front-illuminated Fairchild CCD202 to detect photoelectrons has been evaluated for operating conditions anticipated in space applications. Under electron bombardment, the CCD exhibited severe increases in dark current and reduction in responsivity after detecting approximately 10 to the 6th power electrons per pixel, which corresponds to a lifetime of about 10 hours. In an effort to extend the lifetime of front-irradiated CCDs, parametric studies of the effects of electron energy, operating temperature of the CCD, clock voltages, and annealing (thermal, UV, and electron-bombardment) were performed. The only technique which can significantly extend the lifetime of the presently available front-illuminated Fairchild CCD202 type device appears to be to sequentially utilize different segments of the array. Perhaps an order of magnitude increase in lifetime could be obtained in this manner. A survey of other CCD radiation damage work suggested two techniques which could significantly increase ICCD lifetime.

AD-A065 043/2GA PC **A05**/MF **A01**
Technology Service Corp., Santa Monica, CA.
Data Base Descriptors for Electro-Optical Sensor Simulation.
Final rept. May 77-Jun 78,
Timothy A. Zimmerlin, George J. Sutty, and Anthony J. Stenger. Feb 79, 77p AFHRL-TR-78-86
Contract F33615-77-C-0049

Descriptors: *Optical images, *Electrooptics, Data bases, Forward looking infrared systems, Television systems, Low light levels, Computerized simulation, Digital systems, Thermal targets, Image converters.

The purpose of this study is to investigate the use of the Defense Mapping Agency Aerospace Center (DMAAC) digital source data for simulation of Forward Looking Infrared (FLIR) and Low Light Level Television (LLLTV) sensor imagery during various periods of the day and seasons of the year. This includes determination of deficiencies of the DMAAC data base which limit its us as well as identification of additional parameters which would increase its utility for sensor simulation. The approach taken in the study was to determine what information is required of the scene, its environment, and the sensor and to generate realistic imagery from it. Then imagery using lesser amounts of data can be generated for various user applications. The impact on the data base can then be assessed for a given application and level of detail in the imagery. The results of this study include a realistic tonal model for the simulation of passive sensor imagery of complex cultural scenes, the generation of imagery from a scene constructed according to the DMAAC specifications, an assessment of the resultant diurnal and seasonal imagery, and the relationship between the model data requirements and the resources of the data base. (Author)

AD-A065 126/5GA PC **A05**/MF **A01**
Electronic Vision Co., San Diego, CA.
ICCD Sensitivity Investigation.
Final technical rept. Aug 77-Jun 78,

R. O. Ginaven. 22 Jun 78, 89p SAI-78-730-EVC, SAMSO-TR-79-1
Contract F04701-77-C-0058

Descriptors: *Optical detection, *Charge coupled devices, *Image tubes, *Image intensifiers(Electronics), Photosensitivity, Electrostatic fields, Optical scanning, Signal to noise ratio, Pulse rate, Darkness, Zodiacal light, Stars, Integrators, Low power, Spaceborne.
Identifiers: Intensified charge coupled devices, Digital integrators, Preprocessors, Stellar magnitudes, Pixels.

The sensitivity of an Intensified Charge Coupled Device (ICCD) utilizing a CCD to detect photoelectrons has been evaluated for operating conditions anticipated in space applications. Data processing techniques for signal discrimination have been identified and evaluated using simulated star scanning measurements and estimated signal and background (zodiacal light) intensities. Since the ICCD is capable of detecting single photoelectrons with a high signal-to-noise ratio, the practical sensitivity is limited by the intensity of background light. The background produces signals which occasionally exceed the detection threshold in the absence of a target. The rate of these 'background events' has been calculated for various conditions and found to be acceptably low even for detection of relatively faint objects (visual magnitude, m(v) = 8) with a high detection probability (99%) in quite intense backgrounds (up to -1.2 stellar magnitudes per square degree) corresponding to the zodiacal light at about 10 degrees from the sun, provided that scattering and diffraction of sunlight at 10 deg off axis is less than -1.2 m(v).

AD-A065 427/7GA PC **A02**/MF **A01**
Naval Ocean Systems Center, San Diego, CA.
Detection of Shallow Submerged Obstacles by Two Color Lidar at Angles of Incidence Approaching 90 Degrees (Blue-Green Laser Radar).
Final rept. Jan-Aug 78,
R. D. Anderson, R. F. Howarth, and G. C. Mooradian. 1978, 11p Rept no. NOSC/TD-199
Availability: Pub. in Society of Photographic and Instrumentation Engineers, v160 p166-173 1978.

Descriptors: *Optical radar, *Underwater objects, Optical detection, Shallow depth, Target signatures, Backscattering, Clutter, Surface properties, Light scattering, Reprints.

No abstract available.

17I. Radar Detection

AD-A064 915/2GA PC **A02**/MF **A01**
Texas Instruments, Inc., Dallas. Central Research Labs.
Solid-State Module Phase II.
Interim rept. 1 Oct-31 Dec 78,
W. R. Wisseman, G. E. Brehm, J. W. Maxwell, and H. Q. Tserng. 6 Feb 79, 20p Rept no. TI-08-79-05
Contract N00173-78-C-0231

Descriptors: *Radar transmitters, *Transistor amplifiers, *Field effect transistors, *Gallium arsenides, Power amplifiers, Phased arrays, Pulse amplifiers, Modular construction, Gates(Circuits), Modules(Electronics), Solid state electronics, Transmitter receivers, X band, Efficiency, Gain, Airborne.
Identifiers: Driver amplifiers.

This interim report covers the first three months of a six-month program to fabricate and evaluate ten X-band solid-state amplifier modules. This program is the second phase of a four-phase program to develop an all-solid-state transceiver module for use in active element, airbonre array radar applications. The effort during this report period includes GaAs FET device fabrication with emphasis on device uniformity and yield. An improved three-stage driver amplifier has achieved an output power of 1.6 W with 20 dB gain and 29.5% power added efficiency over the 9 to 10 GHz band. A totally integrated amplifier module housing for accomodating both the driver amplifier and the balanced output stage was also designed. (Author)

AD-A065 045/7GA PC **A03**/MF **A01**
Army Missile Research and Development Command, Redstone Arsenal, AL. Technology Lab.
Radar Track Data Correlation or Reachable Sets Revisited: The Reachable State.
Technical rept.,
Richard E. Dickson. 31 Jul 78, 31p Rept no. DRDMI-T-78-61

Descriptors: *Radar tracking, *Flight paths, *Air traffic control systems, Correlation techniques, Flight Maneuvers, Position finding, Mathematical prediction, Set theory.
Identifiers: Reachable sets analysis.

Given an aircraft's position and velocity at time t sub 0 and the limits on the rate at which the aircraft executes horizontal turns, what is the set of all possible position at time t, given the change in heading at time t and that the speed is unchanged. (Author)

AD-A065 329/5GA PC **A02**/MF **A01**
Texas Tech. Univ., Lubbock. Dept. of Electrical Engineering.
An Improved Coherent Processor for Ambiguity Function Display.
Interim rept.,
Robert J. Marks, II, John F. Walkup, and Thomas F. Krile. 1978, 5p AFOSR-TR-79-0155
Grant AFOSR-75-2855
Prepared in cooperation with Rose-Hulman Inst. of Tech., Terre Haute, IN. Dept. of Electrical Engineering.

Descriptors: *Radar signals, *Signal processing, *Optical processing, Information processing, Coherent optical radiation, Display systems, Time signals, Delay circuits, Doppler effect, Fourier transformation.
Identifiers: *Ambiguity functions.

A coherent optical processor for displaying a signal's ambiguity function is described. The required time delay is realized by 45 deg. rotations of two identical input transparencies, and the Doppler shift by a 1-D Fourier transformation. The modulus squared of the entire ambiguity function is displayed in the output plane (Doppler shift-time delay). Examples of the optically computed ambiguity functions for single and double pulse signals are shown to be in excellent agreement with the theory. Advantages of this approach over various alternative schemes are discussed. (Author)

N79-19187/0GA PC **A18**/MF **A01**
Axiomatix, Los Angeles, CA.
Shuttle Orbiter Ku-Band Radar/Communications System Design Evaluation.
Final Report.
12 Feb 79, 410p NASA-CR-160135, R7902-2
Contract NAS9-15515

Descriptors: *Space shuttle orbiters, *Superhigh frequencies, *Tracking radar, Communication equipment, Performance prediction, Systems engineering, Target acquisition.
Identifiers: *Space communicaton, Microwave communication, Ku band.

For abstract, see STAR 1710

N79-19188/8GA PC **A08**/MF **A01**
Axiomatix, Los Angeles, CA.
Ranging and Tracking System for Proximity Operations, Phase 1.
Final Report.
S. Udalov, and P. W. Nilsen. 30 Jan 79, 172p NASA-CR-160125, R7901-5
Contract NAS9-15666

Descriptors: *Rangefinding, *Remote sensors, *Systems engineering, *Tracking radar, Analysis(Mathematics), Error analysis, Target acquisition, Velocity measurement.

For abstract, see STAR 1710

PAT-APPL-6-012 409/GA PC **A02**/MF **A01**
Department of the Navy Washington DC
High-Speed Digital Pulse Compressor.
Patent Application,
Ben H. Cantrell, and Bernard L. Lewis. Filed 15 Feb 79, 22p AD-D005 830/5

Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

Descriptors: *Patent applications, *Pulse compression, *Radar pulses, *Range finding, Matched filters, Complex numbers, Fast fourier transforms, Digital systems, High rate.
Identifiers: Discrete fourier transform, Signal processing.

The pulse expansion and compression system, especially useful for radar ranging, is comprised of a pulse coder for expanding an input pulse and a pulse compressor of the matched-filter type. The coder consists of a plurality of delay stages into which the input pulse is fed, a discrete Fourier transform (DFT) circuit to which the output signals of the delay stages are fed, a time-dispersion means (TDM) comprising an arrangement of delay stages for differently delaying the output signals from the DFT, and a coherent summer for adding the real and imaginary parts of the signals from the TDM. The summer output is fed to a phase modulator and then to the transmitter. The echo signals are conjugated, time-inverted, and passed through the same DFT as the input pulse signal. The outputs of the DFT are then passed through a TDM of the same type as the first TDM, but this time in time-inverted order. The outputs of the second TDM are fed through a coherent summer and an envelope detector to provide a cross-correlated facsimile of the original input pulse (Author)

17J. Seismic Detection

AD-A065 319/6GA PC **A04**/MF **A01**
Teledyne Geotech, Alexandria, VA. Seismic Data Analysis Center.
A Study of Amplitude Variations and m sub b Bias at LASA Subarrays.
Technical rept.,
A. C. Chang, and D. H. von Seggern. 1 May 78, 71p Rept no. SDAC-TR-77-11
Contract F08606-78-C-0007, ARPA Order-2551

Descriptors: *Seismic data, Data acquisition, Seismic arrays, Anomalies, Attenuation, Scattering, Variations, Standard deviation, Bias, Seismic detection, *Underground explosions, Linear regression analyses.
Identifiers: Large aperture seismic array, Amplitude, Signal processing.

LASA subarray amplitude anomalies are investigated using 395 medium-sized events, distributed in ten azimuthally divided sectors. Although LASA magnitudes, when averaged over all azimuths, are only slightly biased relative to NEIS magnitudes, the amount of bias varies with azimuth and subarray, suggesting that a simple station correction for m sub b bias is not adequate. In addition, fluctuations among LASA subarrays are about 0.15 in standard deviation, even when these magnitudes are calibrated in sectors. Details of such fluctuations are explained in part by local crustal and upper-mantle heterogeneities under LASA. The amplitude anomalies are linearly related to the amount of travel-time anomalies in each sector, implying that both effects are due to crustal focussing.

AD-A065 324/6GA PC **A03**/MF **A01**
Ford Aerospace and Communications Corp., Billings, MT. Engineering Services Div.
Montana Large Aperture Seismic Array.
Final technical rept. 1 Apr-31 Dec 78,
R. E. Matkins. 25 Jan 79, 38p Rept no. TR-2145-79-118
Contract F08606-78-C-0003

Descriptors: *Seismic arrays, Nuclear explosions, Montana, Seismic detection, Earthquakes, Maintenance, Shock waves, Blast waves.
Identifiers: Large aperture seismic array, Underground explosions, Seismological stations.

The continued operation and maintenance activities at the Montana LASA during the period April 1 and June 30, 1978, and the seismic array roll-up activities between July 1 and December 31, 1978, are described. Array operations including the preparation of daily teleseismic event reports are detailed. Maintenance activities at both the data and

maintenance centers are discussed. The array roll-up effort is described by task and the equipment disposition status reported. (Author)

AD-A065 487/1GA PC **A02**/MF **A01**
Teledyne Geotech, Garland, TX.
Special Data Collection Systems (Project T/4703).
Semiannual rept. Apr-Sep 78,
John R. Sherwin, and George C. Kraus. 29 Sep 78, 17p Rept no. TR-78-13
Contract F08606-78-C-0011, ARPA Order-2897

Descriptors: *Seismic data, Seismographs, Data acquisition, Seismic detection, Long range(Distance), Nuclear explosion testing, Seismological stations, Digital recording systems, High frequency, Portable equipment, Seismometers, Boreholes, Magnetic recording systems, Low costs.
Identifiers: Vela Uniform, Colorado, Texas.

Work performed under Project T/4703, Special Data Collection Systems, is an extension of the program begun in 1973 under Contract F08606-74-C-0013. At the start of this period SDCS systems remained in operation at four sites. Two sites record short-period data on analog tape only; the Rio Blanco Colo., configuration is the same except that data are also recorded on the digital recorder. At the 4th site, both short-period and long-period data from a KS36000 system are recorded on analog and digital recorders. Operations at all sites continued until late August when all except Rio Blanco were closed. Equipment was returned for refurbishing and preparation for redeployment in October, 1978. A special project to collect high-frequency data at a site near McKinney, Texas, was begun in May. In the first phase, data were collected from both the KS36000 vertical and a standard vertical instrument in the high-frequency passband. These data are being analyzed to determine whether the KS36000 operates properly at this frequency. Phase two, which began in mid-September and will continue through December, will collect one channel of high-frequency data and three channels of intermediate period data from the KS36000 to determine the potential usefulness of such seismographs in detection of events at relatively close distances up to 650 km.

18. NUCLEAR SCIENCES AND TECHNOLOGY

18B. Isotopes

N79-19267/0GA PC **A13**/MF **A01**
Von Karman Inst. for Fluid Dynamics, Rhode-Saint-Genese (Belgium).
Aerodynamic Separation of Gases and Isotopes.
1976, 280p VKI-LECTURE-Ser-82
Conf-Lecture Held at Rhode Saint Genese, Belgium 5-9 Jan. 1976.

Descriptors: *Aerodynamics, *Gas dissociation, *Gas dynamics, *Gases, *Isotope separation, *Isotopes, Lectures, Economic analysis, Gaseous diffusion, Kinetics, Laser applications, Methodology, Separation, Technology assessment.
Identifiers: *Meetings, Belgium.

For abstract, see STAR 1710

PAT-APPL-880 247/GA PC **A02**/MF **A01**
Department of Energy, Washington, DC.
Composition and Method for Collecting Radioiodine.
Patent Application,
C. H. Distenfeld, and J. R. Klemish, Jr. Filed 22 Feb 78, 14p
This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

Descriptors: *Iodine isotopes, *Silica gel, Adsorption, Iodine, Radioactive waste processing, Silver, Sorptive properties.
Identifiers: ERDA/052001, *Patent applications.

For abstract, see ERA citation 04:021767.

PATENT-4 088 737
Not available NTIS
Department of Energy, Washington, DC.
Dry Method for Recycling Iodine-Loaded Silver Zeolite.
Patent,
T. R. Thomas, B. A. Staples, and L. P. Murphy. Filed 2 Nov 76, patented 9 May 78, 6p PAT-APPL-737 650
Supersedes PAT-APPL-737 650-76.
This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC. 20231 $0.50.

Descriptors: *Fission products, *Iodine, *Radioactive waste processing, *Zeolites, Adsorption, Decontamination, Gaseous wastes, Ion exchange, Radioisotopes, Regeneration, Removal, Silver iodides, Sorptive properties.
Identifiers: ERDA/052001, *Patents.

For abstract, see ERA citation 04:018135.

18C. Nuclear Explosions

BMVg-FBWT-78-10 PC **A08**/MF **A01**
Bundesministerium der Verteidigung, Bonn (Germany, F.R.). Abt. Wehrtechnik.
Production Mechanism of the EMP of Nuclear Weapons Detonations: Electron Current Field, and Conductivity in Air.
P. Panussi, and H. Reker. 1978, 152p
In German.
U.S. Sales Only.

Descriptors: *Earth atmosphere, *Nuclear explosions, Air, Atmospheric explosions, Compton effect, Computer codes, Electric conductivity, Electric fields, Electromagnetic pulses, Gamma radiation, Levels, Nuclear weapons, Numerical solution, Photoelectric effect, Radiation flux, Time dependence.
Identifiers: ERDA/640202, West Germany.

For abstract, see Atomindex citation 09:413040.

18D. Nuclear Instrumentation

BNL-25070 PC **A02**/MF **A01**
Brookhaven National Lab., Upton, NY.
Charge Dividing Mechanism on Resistive Electrode in Position-Sensitive Detectors.
V. Radeka, and P. Rehak. Oct 78, 15p CONF-781033-8
Contract EY-76-C-02-0016
IEEE nuclear science symposium, Washington, DC, USA, 18 Oct 1978.

Descriptors: *Drift chambers, *Electronic circuits, *Proportional counters, Electric charges, Electromagnetic radiation, Electronic equipment.
Identifiers: ERDA/440101.

For abstract, see ERA citation 04:020210.

CONF-781033-11 PC **A02**/MF **A01**
Idaho National Engineering Lab., Idaho Falls.
High Rate 4 pi beta - gamma Coincidence Counting System.
L. O. Johnson, and R. J. Gehrke. 1978, 10p
Contract EY-76-C-07-1570
IEEE nuclear science symposium, Washington, DC, USA, 18 Oct 1978.

Descriptors: *Coincidence circuits, *Proportional counters, *Scintillation counters, Coincidence methods, Electronic circuits, Performance.
Identifiers: ERDA/440101.

For abstract, see ERA citation 04:020211.

COO-3522-22 PC **A02**/MF **A01**
Sloan-Kettering Inst. for Cancer Research, New York. Biological Dosimetry Lab.
Biological and Clinical Dosimetry. Progress Report, October 1, 1977--September 30, 1978.
J. S. Laughlin, and J. C. McDonald. 1978, 19p
Contract EY-76-S-02-3522

Descriptors: *Calorimetric dosemeters, *Tissue-equivalent detectors, Calibration, Dosimetry, Plastics, Temperature effects.
Identifiers: ERDA/440102.

For abstract, see ERA citation 04:020226.

HEDL-SA-1556 PC **A03**/MF **A01**
Westinghouse Hanford Co., Richland, WA.
SSTR Materials for Use in Light Water Reactor-Pressure Vessel Surveillance Exposures.
R. Gold, J. H. Roberts, and F. H. Ruddy. 1978, 33p CONF-780722-21
Contract EY-76-C-14-2170
Symposium on effects of radiation in structural materials, Richland, WA, USA, 10 Jul 1978.

Descriptors: *Bwr type reactors, *Dielectric track detectors, *Neutron detection, *Pressure vessels, *Pwr type reactors, Evaluation, Fission tracks, Mica, Neutron dosimetry, Physical properties, Quartz, Specifications.
Identifiers: ERDA/440101, ERDA/210100, ERDA/210200.

For abstract, see ERA citation 04:020213.

LBL-7282 PC **A02**/MF **A01**
California Univ., Berkeley. Lawrence Berkeley Lab.
Semiconductor Detectors: An Introduction.
F. S. Goulding. Apr 78, 7p CONF-771023-50
Contract W-7405-ENG-48
Nuclear science symposium, San Francisco, CA, USA, 19 Oct 1977.

Descriptors: *Semiconductor detectors, Design, Performance, Reviews.
Identifiers: ERDA/440101.

For abstract, see ERA citation 04:020214.

ORNL/TM-6709 PC **A02**/MF **A01**
Oak Ridge National Lab., TN.
Response of a Uranium--Plastic Calorimeter to Low GeV (Less Than or Equal to 10-GeV) Protons.
T. A. Gabriel, and B. L. Bishop. Jan 79, 15p
Contract W-7405-ENG-26

Descriptors: *Proton detection, *Shower counters, Calorimeters, Energy resolution, Gev range 01-10, Plastic scintillation detectors, Plastic scintillators, Protons, Response functions, Saturation, Uranium.
Identifiers: ERDA/440104.

For abstract, see ERA citation 04:024386.

PATENT-4 091 084
Not available NTIS
Department of Energy, Washington, DC.
Purification of Hgl sub 2 for Nuclear Detector Fabrication.
Patent,
M. M. Schieber. Filed 6 Jun 77, patented 23 May 78, 6p PAT-APPL-804 126
Supersedes PAT-APPL-804 126-77.
This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC. 20231 $0.50.

Descriptors: *Mercury iodides, *Crystal growth, *Semiconductor detectors, Iodides, Mercury, Purification, Sublimation, Synthesis, Zone refining.
Identifiers: ERDA/360201, ERDA/360202, ERDA/440101, *Patents, Hgl2 semiconductor detectors, Radiation detectors.

For abstract, see ERA citation 04:019803.

18E. Nuclear Power Plants

NTIS/PS-79/0373/5GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Energy Parks (A Bibliography with Abstracts).
Rept. for 1964-Mar 79,
Audrey S. Hundemann. May 79, 97p*
Supersedes NTIS/PS-78/0384.

Descriptors: *Bibliographies, *Energy parks, *Nuclear parks, Environmental impacts, Thermal pollution, Waste heat, Social effect, Economic impact, Water supply, Site surveys, Planning, Abstracts.

Energy centers wherein nuclear facilities are clustered in and delimited to a relatively small number

of locations throughout the United States are discussed in this bibliography of Federally-funded research. Topic areas cover technical, environmental, and socioeconomic factors involved in facilities siting including resource requirements, atmospheric considerations regarding the impact of heat dissipation, and comparisons between dispersed nuclear power plants nuclear energy centers. (This updated bibliography contains 90 abstracts, 21 of which are new entries to the previous edition.)

NTISUB/E/039 Subscription
Nuclear Regulatory Commission, Washington, DC. Office of Inspection and Enforcement.
Licensee Contractor and Vendor Inspection Status Report, 1979.
Quarterly repts.
1979, 4 issues*
Paper copy available on subscription, North American Continent price $45.00, single copy price PC$12.50, MF$12.50; all others write for quote.

Descriptors: *Nuclear power plants, *Nuclear reactor safety, Inspection, Investigations, Quality assurance, Regulations.

A fundamental premise of the Nuclear Regulatory Commission's (NRC) nuclear facility licensing and inspection program is that a licensee is responsible for the proper construction and safe operation of nuclear power plants. The total government-industry system for the inspection of nuclear facilities has been designed to provide for multiple levels of inspection and verification. Licensees, contractors and vendors each participate in a quality verification process in accordance with requirements prescribed by, or consistent with, NRC rules and regulations. The NRC inspects to determine whether its requirements are being met by a licensee and his contractors, while the great bulk of the inspection activity is performed by the industry within the framework of sequential, ongoing quality verification programs. In addition to providing information on inspection results, this Licensee Contractor and Vendor Inspection Status Report - the 'White Book' contains Bulletins and Circulars issued by the Office of Inspection and Enforcement during the period of time covered by each publication of the book. The White Book contains information normally used to establish a 'qualified suppliers' list; however, the information contained in this document is not adequate, nor is it intended to stand by itself, as a source of information concerning qualified suppliers.

18F. Radiation Shielding and Protection

CONF-780858-8 PC **A02**/MF **A01**
Tennessee Univ., Knoxville.
Sensitivity and Uncertainty Analysis Applied to the NBS-ISNF.
B. L. Broadhead, and J. H. Marable. 1978, 18p
Contract W-7405-ENG-26
Workshop on theory and application of sensitivity and uncertainty analysis, Oak Ridge, TN, USA, 22 Aug 1978.

Descriptors: *Bwr type reactors, *Nuclear data collections, *Pwr type reactors, Cross sections, Data covariances, Evaluation, Fission, Least square fit, Neutron flux, Neutron spectra, One-dimensional calculations, Plutonium 239 target, Sensitivity, Standards, Uranium 235 target, Uranium 238 target.
Identifiers: ERDA/654003, ERDA/210100, ERDA/210200.

For abstract, see ERA citation 04:024883.

CONF-780927-1 PC **A02**/MF **A01**
Oak Ridge National Lab., TN.
Polarized Neutron Diffraction in High Magnetic Fields.
R. M. Moon. Jul 78, 21p
Contract W-7405-ENG-26
Conference on solids and plasmas in high magnetic fields, Cambridge, MA, USA, 18 Sep 1978.

Descriptors: *Neutron diffraction, Kondo effect, Magnetic fields, Magnetic materials, Paramagnetism, Polarized beams, Transition elements.
Identifiers: ERDA/654003.

For abstract, see ERA citation 04:020874.

LA-7584-M PC **E03**/MF **A01**
Los Alamos Scientific Lab., NM.
NJOY Nuclear Data Processing System: User's Manual.
R. E. MacFarlane, R. J. Barrett, D. W. Muir, and R. M. Boicourt. Dec 78, 78p ENDF-272
Contract W-7405-ENG-36

Descriptors: *Computer codes, *Neutron transport, *Photon transport, Cdc computers, Cross sections, Multigroup theory, N codes.
Identifiers: ERDA/654001, ERDA/654003.

For abstract, see ERA citation 04:020866.

ORNL-TM-6529 PC **A05**/MF **A01**
Oak Ridge National Lab., TN.
DOT-IV Two-Dimensional Discrete Ordinates Transport Code with Space-Dependent Mesh and Quadrature.
W. A. Rhoades, D. B. Simpson, R. L. Childs, and W. W. Engle, Jr. Jan 79, 90p
Contract W-7405-ENG-26

Descriptors: *Computer codes, *Shielding, Boltzmann equation, Cdc computers, Criticality, Cylindrical configuration, D codes, Discrete ordinate method, Fortran, Ibm computers, Iterative methods, Multigroup theory, Neutron fluence, Neutron flux, Neutron transport, Neutrons, Photon transport, Photons, Quadratures, Slowing-down, Space dependence, Transport theory, Two-dimensional calculations.
Identifiers: ERDA/654002, ERDA/654001, ERDA/654003.

For abstract, see ERA citation 04:020873.

PB-293 660/7GA PC **A03**/MF **A01**
Hanford Engineering Development Lab., Richland, WA.
Dynamic Analysis to Establish Normal Shock and Vibration of Radioactive Material Shipping Packages.
Quarterly progress rept. Jul-Sep 78,
S. R. Fields, and S. J. Mech. Mar 79, 43p HEDL-TME-78-102, NUREG-CR-0589
Contract NRC-60-78-254
See also report for 1 Apr-30 Jun 78, PB-291 027.

Descriptors: *Radioactive materials, *Shipping containers, *Impact tests, Mechanical shock, Shock mechanics, Vibration, Railroad cars, Impact shock, Dynamic response, Couplings.
Identifiers: Spent fuel casks, Hazardous materials transportation.

A new calculation sequence was developed to simulate the behavior of the coupler subsystem for the cask-rail car (hammer car) and the lead car in the group it impacts (struck car) during humping operations. This new coupler submodel simulates the hysteresis-type behavior of friction draft gears. Friction draft gears consist of springs and dampers in parallel rather than the series arrangement upon which the previous calculation sequence was based. Results from this submodel compare well with experimental results for friction draft gears in their 'active' state during impact (before bottoming out and during recoil). This coupler submodel will now be incorporated into the full cask-rail car model.

PB-294 696/0GA PC **A03**/MF **A01**
Illinois State Dept. of Public Health, Springfield. Div. of Radiological Health.
Transportation of Radioactive Material in Illinois.
Rept. for 6 Jun 77-6 Jun 78.
Apr 79, 30p NUREG-CR-0756
Sponsored in part by Department of Transportation, Washington, DC.

Descriptors: *Radioactive materials, *Illinois, Radiation dosage, Radiation shielding, Shipping containers, Materials handling, Regulations, Radiation measuring instruments.
Identifiers: *Hazardous materials transportation.

Under agreement with the U. S. Nuclear Regulatory Commission and the U. S. Department of Transportation, the State of Illinois engaged in a cooperative program for the surveillance of radioactive material in highway transport within the State. During the first year of the program, from June 6, 1977 to June 6, 1978, ten Illinois State Police troopers monitored the State's highways from time to time in cruisers especially equipped with radiation detection instrumentation. The data collected during the monitoring process are contained in the report. The information relates to personnel radiation exposures, condition of packages, handling practices, and general adherence to regulations governing the transport of radioactive materials.

18G. Radioactive Wastes and Fission Products

PB-294 440/3GA PC **A05**/MF **A01**
Nuclear Regulatory Commission, Washington, DC. Office of State Programs.
Means for Improving State Participation in the Siting, Licensing and Development of Federal Nuclear Waste Facilities.
Report to the Congress.
Mar 79, 91p* NUREG-0539

Descriptors: *State government, States(United States), Licenses, Planning, Law(Jurisprudence).
Identifiers: *Radioactive waste facilities, Radioactive waste management, Licensing, Site selection.

This report discusses means for improving state participation in the Federal nuclear waste management programs for siting, licensing, and developing new waste facilities and is in response to the requirements of section 14 of the 1979 NRC authorization act. Although we will attempt in this report to suggest means by which opportunities for state participation may be encouraged in the entire Federal waste management program, our emphasis will remain with our own agency's processes.

PB-294 580/6GA PC **A14**/MF **A01**
Battelle Pacific Northwest Labs., Richland, WA.
MESODIF-II: A Variable Trajectory Plume Segment Model to Assess Ground-Level Air Concentrations and Deposition of Routine Effluent Releases from Nuclear Power Facilities.
Final rept.,
David C. Powell, H. L. Wegley, and T. D. Fox. Apr 79, 319p* PNL-2419, NUREG-CR-0523
Contract NRC-03-77-181

Descriptors: *Air pollution, Nuclear power plants, Plumes, Concentration(Composition), Atmospheric diffusion, Wind velocity, Radioactive wastes, Mathematical models, Computer programs, Fortran.
Identifiers: *Radioactive effluents, Radionuclide migration, MESODIF-2 computer program, HAPBS computer program, STAGG computer program, RERITE computer program, PSST computer program, CDC-6400 computers, Plume segment models.

MESODIF-II is a variable trajectory plume segment atmospheric transport model designed to predict normalized air concentrations and deposition of radioactive, but otherwise non-reactive, effluents emanating from one or two levels over the same position in a xy-plane. In such a model, calculated particle trajectories vary as synoptic scale wind varies. At all sampling times the particles are connected to form a segmented plume centerline, enclosed by a plume the lateral and vertical dimensions of which are determined by a parameterization of turbulence scale diffusion. The impetus for the development of this model arose from the need of the U. S. Nuclear Regulatory Commission to assess radiological effects resulting from routine nuclear power reactor operations, as outlined in U. S. Nuclear Regulatory Guide 1.111.

18H. Radioactivity

PB-294 441/1GA PC **A07**/MF **A01**
Idaho National Engineering Lab., Idaho Falls.
Gamma Dose Measurements at Zion and Fort Calhoun Stations.
Topical rept.,
N. C. Dyer, R. L. Bunting, E. B. Nieschmidt, S. T. Croney, and R. L. Kynaston. Apr 79, 145p NUREG-CR-0755

Contract DOE-EY-76-C-07-1570

Descriptors: *Radiation dosage, *Gamma flux density, Gamma rays, Nuclear reactor safety, Pressurized water reactors, Water cooled reactors, Radioactive isotopes, Concentration(Composition), Airborne wastes, Liquids.
Identifiers: Zion-1 reactor, Calhoun-1 reactor, Zion-2 reactor, Gamma dosimetry, Spent fuel storage, Fuel pools.

This report presents data obtained from an in-plant dose-rate measurement study conducted for the Nuclear Regulatory Commission in support of the Radiological Assessments Branch of the Office of Nuclear Reactor Regulation. The objective of this study was to provide experimental data to the NRC for evaluation of the gamma radiation fields in personnel access areas within operating LWR's. As partial fulfillment of this objective, data were obtained at two PWR's on in-plant gamma radiation fields in areas such as inside and outside equipment cubicles and spent fuel pool areas. Also, airborne radionuclide concentrations were measured in areas where plant personnel could be working during a refueling outage. The data presented were obtained at the Zion Station operated by Commonwealth Edison Co. and located near Zion, Illinois and at the Fort Calhoun Station - Unit 1 operated by the Omaha Public Power District and located near Blair, Nebraska. Dose-rate measurements were made in conjunction with the NRC in-plant source term measurement program and were conducted during July and November, 1976 at Zion Station and August through October, 1976 at Fort Calhoun Station.

18I. Reactor Engineering and Operation

NTISUB/E/142 Subscription
Nuclear Regulatory Commission, Washington, DC. Div. of Rules and Records.
Nuclear Regulatory Commission Issuances, 1979.
Monthly repts.
1979, 12 issues
Paper copy available on subscription, North American Continent price $50.00/year; single copy price PC$6.25, MF$6.25; all others write for quote.

Descriptors: *Nuclear reactor safety, *Licenses, *Nuclear power plants, Regulations, Requirements, Litigation.
Identifiers: Nuclear Regulatory Commission.

The series of monthly reports available by annual subscription presents the decisions and opinions of the Commission, the Atomic Safety and Licensing Appeal Boards, the Atomic Safety and Licensing Boards, and the Administrative Law Judge.

PB-293 655/7GA PC **A16**/MF **A01**
Nuclear Regulatory Commission, Washington, DC. Office of Management and Program Analysis.
Nuclear Power Plant Operating Experience - 1977.
Annual rept.,
M. R. Beebe. Feb 79, 354p NUREG-0483
See also Annual report for 1976, PB-275 227.

Descriptors: *Nuclear power plants, *Nuclear electric power generation, Pressurized water reactors, Boiling water reactors, Outages, Nuclear reactor accidents, Nuclear fuel elements, Radiation dosage.
Identifiers: *Reactor operation, Radioactive effluents.

This report is the third in a series of reports issued annually that summarize the operating experience of U.S. nuclear power plants in commercial operation. Power generation statistics, plant outages, reportable occurrences, fuel element performance, occupational radiation exposure and radioactive effluents for each plant are presented. Summary highlights of these areas are discussed. The report includes 1977 data from 61 plants -- 25 boiling water reactor plants and 36 pressurized water reactor plants.

PB-293 661/5GA PC **A05**/MF **A01**
Kansas State Geological Survey, Lawrence.
A Study of the Regional Tectonics and Seismicity of Eastern Kansas; Summary of Project Activities and Results to the End of the Second Year, or September 10, 1979.
Technical rept. Oct 76-Oct 78,
Frank W. Wilson. Mar 79, 87p NUREG-CR-0666
Contract NRC-04-77-017

Descriptors: *Seismic surveys, *Nuclear reactor safety, *Kansas, Earthquakes, Risk, Geologic structures, Nemaha Uplift, Tectonics.
Identifiers: Eastern Region(Kansas), Risk assessment.

The Kansas Geological Survey, in ccoperation with the State Geological Surveys of Oklahoma, Nebraska, and Iowa, is making a five-year study of the regional tectonics and seismicity of the Nemaha Uplift, an area of moderate historical seismicity, and related geologic structures in order to better understand the sources and mechanisms of the seismic activity in the central midcontinent. The studies, which are funded in part by the U.S. Nuclear Regulatory Commission are intended to provide a more rational evaluation of earthquake risk as it applies to the design of nuclear facilities. This report summarizes the progress of all research done in Kansas during the first two years of the project and details the results and preliminary conclusions.

PB-293 755/5GA PC **A10**/MF **A01**
California State Office of Emergency Services, Sacramento.
Radiological Defense Officer Conference Held at South Lake Tahoe on October 23, 24, 25, 1974.
1978, 205p

Descriptors: *Meetings, *Radiation hazards, *Radiological defense, Irradiation, Health physics, Hazards, Nuclear reactor accidents, Nuclear warfare, Radiological weapons, Terrorism.
Identifiers: Environmental health, Nuclear safeguards.

Topics covered in this document include radiation hazards from nuclear reactor accidents, nuclear warfare, and nuclear-armed terrorists.

PB-294 319/9GA PC **A03**/MF **A01**
Cold Regions Research and Engineering Lab., Hanover, NH.
Ice Blockage of Water Intakes.
Technical rept.,
Kevin L. Carey. Mar 79, 31p NUREG-CR-0548
Contract NRC-03-78-153

Descriptors: *Thermal power plants, *Cooling systems, *Ice formation, Cooling water, Water cooling, Intake systems, Ice control, Nuclear power plants.
Identifiers: *Flow blockage, Frazil ice, Ice sheets.

The ice blockage of water intake structures can pose serious threats to the availability of cooling water at thermal power plants. Using information gained from a literature search and general knowledge of the problem, ice blockage difficulties are described as they may occur in rivers, lakes, reservoirs, and estuaries, and as they may affect intakes either at the surface or submerged. To further enable understanding of these problems, characteristics of both surface sheet ice and frazil ice are examined, namely, formational processes, sizes, thickness, movement or mobility, and modes of blockage or adhesion. Case histories of incidents of ice blockage of intakes, particularly of nuclear power plant cooling systems, are given by means of excerpts from the technical literature. Lastly, a brief overview is provided on the matter of solving ice blockage problems, either through original design, post-construction modification, or revised operational techniques.

PB-294 321/5GA PC **A12**/MF **A01**
Dayton Univ., OH. Research Inst.
Enhancement of On-Site Emergency Diesel Generator Reliability.
Final rept. 1969-Jan 78,
Geral L. Boner, and Harvey W. Hanners. Feb 79, 260p UDR-TR-79-07, NUREG-CR-0660
Contract NRC-03-77-192

Descriptors: *Nuclear reactor safety, *Diesel electric power generation, Reliability, Performance evaluation, Surveys.

The University of Dayton Research Institute has concluded a program designed to provide NRC/DOR with technical assistance in evaluating the factors leading to improved reliability of on-site emergency diesel generator (DG) units. The program consisted of a comprehensive review of DG maintenance and operating experience and a comparative evaluation of the DG manufacturer's recommendations. This information, will enable the NRC to improve the basis on which it makes regulatory decisions. The primary goal of the program is to better identify the main problem areas which decrease the reliability of the DG units and make recommendations. The report has attained the program objectives by identifying and discussing the more significant problems and presenting the recommended corrective actions. The identified problems have been categorized into three groups as a function of their significance.

PB-294 443/7GA PC **A08**/MF **A01**
Creare, Inc., Hanover, NH.
Analysis of Superheated Wall Effects During Refill at Small Scale.
Topical rept.,
Christopher J. Crowley, and Paul H. Rothe. Apr 79, 172p CREARE-TN-277, NUREG-CR-0599
Contract NRC-04-75-162

Descriptors: *Nuclear reactor safety, *Pressurized water reactors, *Superheating, Plenum chambers, Steam, Model tests.
Identifiers: *ECCS, Loss of coolant.

A semi-empirical analysis is presented to calculate the timing and rate of delivery of emergency core coolant (ECC) to the lower plenum of a pressurized water reactor. Emphasis is given to the physical process of ECC bypass by upward flowing steam in the reactor downcomer and the amplification of this effect by steam produced at the superheated vessel walls. The analysis is successfully compared with over 350 tests at 1/15 scale. Sensitivity studies are reported which quantify modeling uncertainties and display the strengths and weaknesses of the analysis. The uncertainties are large, many of the physical processes are difficult to analyze, but it has been possible to develop appropriate 'high', 'low', and 'best' estimates of the behavior. The issue of scaling and applicability to reactors is discussed. It is concluded that the effects of superheated walls on initial refill can probably be neglected if our 'best-estimate' J* scaling of countercurrent flow without superheated walls can be verified by appropriate experiments at significantly larger scale than tested heretofore.

PB-294 579/8GA PC **A04**/MF **A01**
Nuclear Regulatory Commission, Washington, DC. Div. of Fuel Cycle and Material Safety.
The Effects of Natural Phenomena on the Babcock and Wilcox Co. Plutonium Fabrication Plant at the Parks Township Site, Leechburg, Pennsylvania. Docket No. 70-364.
Safety analysis rept.
Apr 79, 58p NUREG-0547

Descriptors: *Nuclear reactor safety, Earthquakes, Wind(Meteorology), Tornadoes, Radiation dosage, Radiation hazards, Floods, Pennsylvania, Plutonium.
Identifiers: *Fuel fabrication plants, *Natural disasters, Babcock and Wilcox Plutonium Fabrication Plant, Leechburg(Pennsylvania).

An analysis of the effects of natural phenomena on the Babcock and Wilcox Co. Plutonium Fabrication Plant at the Parks Township Site at Leechburg, Pennsylvania, has been prepared by the Office of Nuclear Material Safety and Safeguards. The analysis is in support of the renewal of the Special Nuclear Materials License held by the subject company. It addresses the probable effects of damage to the Babcock and Wilcox Plutonium Fabrication Plant by severe weather and earthquake and expresses the consequence of damage as dose to several human receptors. The doses that result from facility damage are multiplied by the occurrence rate for the initiating event yielding the yearly risk.

PB-294 635/8GA PC **A05**/MF **A01**
Pennsylvania State Univ., University Park. Inst. for Research on Land and Water Resources.
Effects of Nuclear Power Plants on Community Growth and Residential Property Values.
Final rept. 30 Sep 77-15 Nov 78,
Hays B. Gamble, R. H. Downing, and O. H. Sauerlender. Apr 79, 97p* NUREG-CR-0454
Contract NRC-04-77-166

Descriptors: *Nuclear power plants, *Community development, Residential buildings, Urban development, Time series analysis, Regression analysis, Property taxes, Economic impact.
Identifiers: *Property values, Tax rates.

This study tested the hypothesis that nuclear power plants adversely affect community growth and residential property values in nearby municipalities. Total assessed real property values from 1960 to 1976 for 64 municipalities and market sales data from 1975 to 1977 on 540 single family dwellings formed the data base, which was within 20 miles of 4 nuclear power plants in the Northeast: Pilgrim, Millstone, Oyster Creek, and R. E. Ginna. Analysis of the time series data showed that the averaged annual growth rates of total assessed values, in real terms, were inversely related to distances from the plants, and that growth rates for the years following plant construction were higher than for the years before plant construction, with the largest growth rate increase observed in the host municipalities. Multiple regression analysis of the cross sectional data explained about 80 percent of the variation in housing prices. The plants exerted no influence on the price of housing. The original hypothesis is rejected. Most people in these areas apparently have little fear over plant related health and safety factors, and the plant itself does not influence residential location decisions. Lower tax rates in host municipalities may even encourage development.

PB-294 695/2GA PC **A06**/MF **A01**
Rensselaer Polytechnic Inst., Troy, NY. Dept. of Nuclear Engineering.
Two-Phase Flow Phenomena in Nuclear Reactor Technology.
Quarterly progress rept. no. 10, 1 Sep-30 Nov 78,
R. T. Lahey, Jr. Mar 79, 102p NUREG-CR-0702
Contract NRC-04-76-301
See also quarterly progress rept. no. 9, PB-290 766.

Descriptors: *Two phase flow, *Nuclear reactor accidents, Flow measurement, Phase coherence, Phase deviation, Boiling water reactors, Flow distribution, Phase velocity, Multiphase flow.
Identifiers: ECCS, Reactor instrumentation, In core instruments, Loss of coolant, Void fraction, Slip ratio.

The purpose of this NRC sponsored university research is to develop a more thorough understanding of two-phase flows phenomena associated with certain hypothetical nuclear reactor accidents: This program is divided into these major tasks: (a) The development of instrumentation-both in-core and out-of-core techniques for the measurement of important multi-phase flow parameters such as void faction, phase velocity, slip ratio and flow regime. (b) The study of phase distribution and separation phenomena - the scope of this study is to address analytically and experimentally our understanding of these phenomena. (c) The study of BWR ECC paralled channel effects - specifically those may occur during the top spray ECCS phase of a hypothetical BWR LOCA event. In all three tasks, considerable analytical and experimental work was accomplished during the Tenth Quarter.

PB-294 730/7GA PC **A23**/MF **A01**
United Nuclear Industries, Inc., Richland, WA.
Determining Effectiveness of ALARA Design and Operational Features,
T. M. Hall, A. M. Dodd, and R. F. Haight. Apr 79, 532p UNI-TR-3, NUREG-CR-0446

Descriptors: *Radiation dosage, *Radiation protection, Nuclear reactors, Benefit cost analysis, Reduction, Irradiation, Computer programming.
Identifiers: N-reactor.

This report presents and demonstrates a method developed by United Nuclear Industries, Inc., for determining whether occupational radiation exposures in nuclear power reactors are as low as is reasonably achievable (ALARA). The method for ALARA assessment consists of: (1) Apparent Reduction Potential (ARP), a ranking method which can be used to set priorities for exposure reduction projects; (2) Achievability Index (AI), a cost/benefit analysis method which can be used to justify exposure reduction projects; and (3) Assessment of ALARA using a data handling computer code which can be used to calculate ARP values and to organize data.

18J. Reactor Materials

PB-292 777/0GA PC **A05**/MF **A01**
Battelle Columbus Labs., OH.
Critical Experiments, Measurements and Analyses to Establish a Crack Arrest Methodology for Nuclear Pressure Vessel Steels.
Quarterly progress rept. Apr-Jun 78,
G. T. Hahn, P. C. Gehlen, A. J. Markworth, R. G. Hoagland, and C. W. Marschall. Feb 79, 90p
BMI-2018, NUREG-CR-0652
Contract AT(49-24)-0293
See also report dated Jan 79, PB-291 993.

Descriptors: *Steels, *Cracking(Fracturing), *Pressure vessels, Nuclear reactor materials, Inhibition, Toughness, Dynamic structural analysis, Methodology, Weldments, Materials tests, Fracture properties.
Identifiers: Steel A533B, Crack arrest.

Results of a program seeking (1) dynamic analyses of crack arrest in thermally stressed nuclear pressure vessels, (2) standardization of a laboratory test method for measuring crack arrest toughness, and (3) a crack arrest toughness data base for unirradiated and irradiated nuclear steels and weldments are described.

18K. Reactor Physics

PB-294 697/8GA PC **A04**/MF **A01**
Atomics International Div., Golden, CO. Rocky Flats Plant.
Reference Critical Experiments.
Progress rept. 1 Oct-31 Dec 78,
G. R. Goebel, I. Oh, D. Pecora, and R. E. Rothe. Apr 79, 59p REP-2888, NUREG-CR-0642
See also report dated Jan 79, PB-292 356. Sponsored in part by Department of Energy, Washington, DC.

Descriptors: *Criticality, *Uranium oxides, Moisture content, Reflectors, Enriched uranium fuels, Oxide nuclear fuels, Uranium 235, Weight(Mass).
Identifiers: *Critical experiments, Slightly enriched uranium.

This is the thirteenth in the series of quarterly progress reports describing reference critical experiments being performed at the Critical Mass Facility at Rockwell International's Rocky Flats Plant for the U.S. Nuclear Regulatory Commission (NRC). In addition to a discussion of experiments already performed, a list of criticality experiments needed to provide criticality data for the design and licensing of new facilities is included. Experimental programs currently underway at Babcock and Wilcox, Battelle Pacific Northwest Laboratories, and Rocky Flats are described. Two critical experiments were repeated using the low-enriched, damp (H/U about 0.75) uranium oxide (U308) in the plastic reflector. They were repeated to determine the combined effect of parameters (oxide weight gain, cuboid dimensions, etc.) that might vary. Repeat experimental results are in good agreement with the original experimental results. Two new critical experiments were performed with plastic interspersed between cans of uranium oxide in the concrete reflector. Reweighing of the oxide cans indicates that the oxide continues to gain weight.

19. ORDNANCE

19A. Ammunition, Explosives, and Pyrotechnics

AD-A064 874/1GA PC **A04**/MF **A01**
Naval Postgraduate School, Monterey, CA.
Fin-Opening Dynamics for an 8-Inch Gun Launched Extended-Range Guided Projectile.
Final rept. Jul 76-Dec 78,
Louis V. Schmidt. 11 Dec 78, 73p Rept no. NPS-67-78-010

Descriptors: *Guided projectiles, *Fins, Opening(Process), Rates, Exterior ballistics, Projectile trajectories, Dynamic response, Transients, Deceleration, Equations of motion, Bending stress, Elastic properties, Obturation(Ballistics), Roll, Lagrangian functions, Torsion, Deflection.
Identifiers: Gun launched, 8-in. projectiles, Extended range guided projectiles.

The fin-opening dynamics for an 8-inch Gun Launched Extended-Range Guided Projectile ERGP) were analyzed during the typical 20 to 30 millisecond time span immediately after the missile departed the gun barrel. Lagrange's equations were used to develop a set of governing dynamic relationship using four generalized coordinates including missile roll angle, fin-opening angle and fin bending and torsion deflections. The latter two coordinates provided an elastic representation for accommodating the fin's transient response during the fin-opening process. Sufficient details were provided so that the analytic model could be modified for other missile and fin configurations, including addition of more fin bending degrees of freedom. Comparison was made between the analysis results and a limited amount of experimental evidence. Agreement was reached with fin-opening times and an indirect conclusion was reached that initial fin-opening angle rates were in the range of 35 to 50 radians/second. The fin elastic response was shown to be dependent primarily upon the fin bending mode. Peak stress encounters by the fin root beyond yield could be avoided by configuring the ERGP obturator rings to control initial missile roll rates to less than 15 revolutions/second. This latter point is important since local yielding of the fins by excessive bending stresses, incurred during launch, can adversely effect the trajectory dynamics by contributing to the presence of a residual roll rate.

AD-A064 908/7GA PC **A03**/MF **A01**
Naval Surface Weapons Center, White Oak Lab., Silver Spring, MD.
Explosive Optimization for a Forty-Two Degree Conical Shaped Charge.
Final rept.,
J. P. Coughlin. 28 Nov 78, 39p Rept no. NSWC/WOL/TR-77-123

Descriptors: *Shaped charges, *Shaped charge jets, Explosives initiators, Conical bodies, Explosive charges, Computer programming, Detonation waves, Kinetic energy, Optimization.
Identifiers: Conical shaped charges.

Computational studies on the jet from a forty-two degree conical liner are reported . Three different modes of initiation were studied with a view to predicting the best jet. The explosive parameters were varied systematically with a view to determining the effects of each parameter on the jet formed. (Author)

AD-A064 914/5GA PC **A04**/MF **A01**
Honeywell, Inc., Hopkins, MN. Defense Systems Div.
Improved BLU-63.
Final technical rept.,
Gordon E. Harms. 1978, 54p
Contract DAAK10-77-C-0021

Descriptors: *Grenades, Bomb fins, Bomb cases, Polyurethane resins, Overlays, Toughness, Tungsten, Aerodynamic characteristics, Bomb trajectories, Grenade fuzes, Manufacturing, Molding techniques.
Identifiers: BLU-63 bombs, XM-74 grenades, M-74 grenades.

This report describes the research and development of a molded plastic overlay shell for the XM74 Grenade (Improved BLU-63 Munition) to provide fins of a very sharp definition, required toughness, and improved aerodynamic characteristics for the ARRADCOM version of the grenade with a pre-engraved sintered tungsten shell for increased terminal effects. Aerodynamic analysis of the grenade with the BLU-26 fins confirmed the improved aerodynamic flight characteristics, and laboratory tests proved the required toughness of the molded plastic overlay. Tests conducted included pull apart at room and high temperature, simulated launch load at high and low temperature, impact at three temperatures, simulated storage, impact and pull apart after simulated storage, and burial tests. The design of the plastic overlay and crimp strap for tested grenades was documented, and the manufacturing process was defined. Burial tests were run on BLU-63 and Improved BLU-63 with standard and modified M219A1 fuzes. No significant difference in burial depth at time of function was noted. (Author)

AD-A065 064/8GA PC **A08**/MF **A01**
Politecnico di Milano (Italy). Ist di Macchine.
The Dynamics of Solid Propellant Combustion.
Technical rept. no. 1 (Annual) Sep 77-Sep 78,
Luigi De Luca, Aldo Coghe, and Adolfo Reggiori. Sep 78, 156p
Grant DAERO-78-G-029

Descriptors: *Solid propellants, *Combustion stability, *Differential equations, Nonlinear systems, Burning rate, Steady state, Gases, Conduction(Heat transfer), Algebraic functions, Flame propagation, Static tests, Dynamic tests, Computerized simulation, Computer programs, Lasers, Doppler systems, Velocimeters.

A nonlinear stability analysis of solid propellant burning was carried out, within the framework of a thermal theory and for quasi-steady gas phase. This required an integral method in reducing the partial differential equation for the condensed phase heat conduction to an approximate ordinary differential equation. A nonlinear algebraic function, called restoring function, was found that contains all basic properties of equilibrium and stability of burning solid propellants. This function depends on the nature of the solid propellant (including its flame) and the operating conditions. Analysis of the restoring function revealed the existence of lower and upper static as well as dynamic burning instability. Nonlinear static and dynamic stability boundaries were determined and stability properties of several unsteady flame models were compared. Most of the predictions were verified by computer simulated tests. The experimental part of this research program is in progress; preliminary results obtained by laser doppler velocimetry and shock tube are discussed. (Author)

AD-A065 184/4GA PC **A08**/MF **A01**
Lockheed Electronics Co., Inc., Denville, NJ.
Production Measurement of Fuze Components under Dynamic Stress.
Final rept. 11 May 76-31 Dec 78,
Richard F. DeMattos. 31 Dec 78, 151p
Contract DAAB07-76-C-0032

Descriptors: *Electric fuzes(Ordnance), Production engineering, Dynamic tests, Parts, Measurement, Real time, Computer programs, Oscillators, Electronic equipment, Lasers, Computers, Height of burst, Control.
Identifiers: M-732 fuzes.

A dynamic test and correction system was designed and partially developed which is capable of high-speed testing and laser-trimming electronic assemblies. The circuits selected for tester verification were the oscillator and amplifier assemblies of the M732 Fuze. Program goals required that a selected critical property of each assembly be set to a + or - 0.5 percent tolerance at an average test and trim rate of 3000 units per hour excluding mechanical handling. The system was designed to measure fundamental properties of modified amplifier assemblies, calculate height of burst, and automatically laser trim a thick-film resistor to adjust this property to a precise value. Oscillator assemblies were adjusted for sensitivity by trimming one of two ceramic chip capacitors. Height of Burst (or sensitivity) was calculated in real-time using a combination of black box equivalent circuit and/or circuit model representations of individual test unit stages. Pre-calculated look-up tables were introduced where complex time-consuming calculations were required.

AD-A065 356/8GA PC **A04**/MF **A01**
Army Armament Research and Development Command, Aberdeen Proving Ground, MD. Ballistics Research Lab.
Yawsonde Flights of 155mm Non-Conical Boattail Projectiles and the 155mm M549 Projectile at Tonopah Test Range--October 1977.
Final rept.,
Anders S. Platou. Nov 78, 58p ARBRL-MR-02881, AD-E430 183
Supersedes rept. no. BRL-IMR-586 dated Dec 77.

Descriptors: *Projectiles, *Boattail afterbodies, Aeroballistics, Yawsondes, Firing tests(Ordnance), ARtillery ammunition, Rocket assisted projectiles, Aerodynamic characteristics, Yaw, Spinning(Motion), Impact, Deflection, Muzzle velocity.
Identifiers: 155-mm projectiles, M-549 projectiles.

As part of the BRL program to develop the non-conical boattail projectile, twenty 155mm projectiles were fired from an M185 gun tube on 18 and 21 October 1977 at the Sandia Corporation, Tonopah Test Range, Nevada. This is the second phase of a planned three phase test program at Tonopah on the non-conical boattail projectiles. The report describes the experimental plans and presents the data records and some of the results obtained during the projectile flights. (Author)

AD-A065 357/6GA PC **A04**/MF **A01**
Villanova Univ., PA. Dept. of Mechanical Engineering.
Thermal Analysis of Folded Ammunition.
Final rept. 1 Sep 77-30 Jun 78,
Edward V. McAssey, Jr., and Christine M. Eastburn. Jan 79, 52p ARSCD-CR-78009, AD-E400 281
Contract DAAK10-77-M-2704

Descriptors: *Cartridges, *Heat transfer, Ignition, Combustion, Thermal analysis, Computerized simulation, Surface temperature, Peak values, Interfaces, Cartridge cases, Interior ballistics, Temperature, Finite difference theory, Response, One dimensional, Two dimensional, Mathematical models, Graphs.
Identifiers: *Folded ammunition, Folded cartridges.

The thermal response of the folded geometry cartridge has been determined. The heat input was determined for a 100 msec cycle. Temperature calculations were obtained for multiple firings of up to 29 rounds. The results indicated a peak surface temperature of approximately 1400 F after 600 rounds. This condition is considered to be no worse than would exist in conventional ammunition. However, the interface temperature betwen the cartridge case and the weapon will be more severe in the region near the base of the interpose region. The magnitude of these temperatures will require further investigation. (Author)

AD-A065 358/4GA PC **A02**/MF **A01**
Army Armament Research and Development Command, Dover, NJ. Product Assurance Directorate.
A Semi-Automatic Radiographic Method for Detecting Felt Pads and Fiber Seals in Tank Ammunition.
Final rept.,
Joseph M. Argento, and Emmett G. Barnes. Jan 79, 16p ARPAD-TR-77005, AD-E400 278

Descriptors: Radiography, *Ammunition components, Densitometers, Automation, *Nondestructive testing, Waxes, Washers(Spacers), Pads(Cushions), Felts, Seals(Stoppers), X ray film, Film readers, Scanning, Detection, Semiautomatic, Computer applications, High explosive ammunition, Tracer ammunition, Projectiles, Tanks(Combat vehicles).
Identifiers: Microdensitometers, 105-mm projectiles, M-393 projectiles.

A scanning microdensitometer was used on radiographs of the 105 mm HEP-T projectile M393 to determine the feasibility of automating a system to detect the presence or absence of felt pads, washers, and seals within the projectile. It was concluded from the experiments performed that wax impregnated felt pads and washers could be detected easily with a semiautomated system. This conclusion is also applicable to the seal area. It is recommended that pads and washers be impregnated with wax to facilitate detection. (Author)

AD-A065 359/2GA PC **A14**/MF **A01**
Army Armament Research and Development Command, Dover, NJ. Product Assurance Directorate.
Prove-Out RAM Assessment Report for the 155 mm M483 LAP Line at Lone Star Army Ammunition Plant.
Technical rept. 28 Nov 77-18 Jan 78,
J. Craig Allen, and John G. Mardo. Nov 78, 324p ARPAD-TR-78003, AD-E400 265

Descriptors: *Projectiles, *Production, Assembly, Loading(Handling), Packaging, Automation, Antitank ammunition, Fuzes(Ordnance), Reliability, Maintainability, Demonstrations, Computerized simulation, Army, Military facilities, Texas.
Identifiers: Lone Star Army Ammunition Plant, Army ammunition plants, M-483 projectiles, 155-mm projectiles, Availability.

During November 1977 Lone Star AAP developed a Demonstration Test Plan (DTP) to govern the Prove-Out test for Project 5745508, 155 mm M483 Automated Assembly and Pack Out system at LSAAP. Prove-Out of the LAP(Loading Assembling and Packing) line was initiated in November 1977 and completed in January 1978. The results of this test showed that the equipment satisfied the applicable test requirements and is capable of meeting an MOB rate of 42,800 projectiles per month on a 500 hour/month basis. This report provides the details of the reliability, availability, maintainability (RAM), and production data analyses upon which this conclusion is based. The computerized RAM analysis for all the equipment for which data were collected during the Prove-Out test is included in this report. (Author)

19C. Combat Vehicles

AD-A065 165/3GA PC **A02**/MF **A01**
Army Test and Evaluation Command, Aberdeen Proving Ground, MD.
Stowage.
Final rept.
22 Jan 79, 8p Rept no. TOP-2-2-802
Supersedes Rept. no. MTP-2-2-802 dated 22 Oct 65, AD-718 017.

Descriptors: *Armored vehicles, *Storage, Test and evaluation, Human factors engineering, Multipurpose, Military requirements, Operational effectiveness.

No abstract available.

AD-A065 409/5GA PC **A07**/MF **A01**
Army Engineer Waterways Experiment Station, Vicksburg, MS.
An Assessment of the Inland Water Crossing Performance of Selected Tactical Support Vehicles (WACROSS).
Final rept. Jan 76-Dec 77,
Clifford J. Nuttall, Jr. Jan 79, 141p Rept no. WES-TR-GL-79-1

Descriptors: *Crossings, Water, *Combat vehicles, Terrain, Performance tests, Data bases, Military vehicles, Tactical analyses.
Identifiers: *Water crossing vehicles, Amphibious vehicles.

This study evaluates the relative water gap crossing performance and crossing assistance requirements of 16 current tactical support vehicles and four combat vehicles in two 1000-sq-km sample terrain areas, one in West Germany and one in the Mid-East, using analytical models. The methodology uses a quantitative terrain data base describing the location and cross section and hydrologic characteristics of all rivers, streams and canals shown on 1:50,000 scale topographic map sheets for an area. Generation of the required gap data bases is described. The terrain data are interacted with approximately 20 vehicle engineering param-

eters to predict the unassisted gap-crossing performance of a vehicle at all described gaps during selected water stages. The same terrain data base is used to evaluate 16 different engineer procedures for providing crossing assistance where required. One of these options is selected on the basis of a preassigned priority list related in general terms to mission requirements. Finally, a mission-oriented search is made for favorable crossing locations. The method accepts one or more movement corridors and determines performance from one end of each corridor to the other along a best route using an optimizing function. For this study, route selection within a corridor is based entirely on gap-crossing assistance priorities.

19D. Explosions, Ballistics, and Armor

AD-A065 125/7GA PC **A03**/MF **A01**
Frank J. Seiler Research Lab., United States Air Force Academy, CO.
Parameterization of the BKW and JCZ Equations of State for Explosives.
Final rept.,
R. Martin Guidry, Raymond R. McGuire, and Edward L. Lee. Jun 78, 36p Rept no. FJSRL-TR-78-0003

Descriptors: *Detonations, Equations of state, *Explosives, Mathematical prediction, Mathematical models, Pressure, Velocity.

The BKW equation of state, an empirical equation of state, for predicting detonation properties of explosives, has been successfully reparameterized. It satisfactorily predicts not only detonation pressures and velocities but also the detonation product composition for both ideal and non-ideal explosive composition. An attempt was made to parameterize the JCZ3 equation of state which is derived from first principles. The attempt was unsuccessful. It is suggested that revision of the equation in the low pressure regime may be necessary. (Author)

AD-A065 220/6GA PC **A02**/MF **A01**
Whittaker Corp., North Hollywood, CA. Shock Hydrodynamics Div.
Method for Measuring the Velocity of Supersonic Projectiles Using a Simple Non-Contact Probe,
N. A. Louie, and W. H. Andersen. 1977, 5p ARO-14396.6-E
Contract DAAG29-76-C-0063
Availability: Pub. in Jnl. of Ballistics, v1 p479-482 1977.

Descriptors: *Projectile trajectories, Flight paths, Supersonic flight, Velocity, Time intervals, Reprints.

No abstract available.

AD-A065 355/0GA PC **A05**/MF **A01**
Army Armament Research and Development Command, Aberdeen Proving Ground, MD. Ballistics Research Lab.
Turbulent Boundary Layer Measurements on the Boattail Section of a Yawed, Spinning Projectile Shape at Mach 3.0.
Final rept.,
Lyle D. Kayser, and Walter B. Sturek. Nov 78, 86p ARBRL-MR-02880, AD-E430 181

Descriptors: *Aeroballistics, *Boattail afterbodies, *Turbulent boundary layer, Supersonic flow, Slender bodies, Projectile trajectories, Ogives, Yaw, Spinning(Motion), Magnus effect, Displacement, Three dimensional flow, Thickness, Pressure measurement, Angle of attack, Low angles.

Total pressure measurements were obtained in the turbulent boundary layer of a spinning body of revolution in support of the BRL Magnus Research Program. Data were obtained on the boattail section of a slender projectile shape at a Mach number of 3.0 and angles of attack up to 6.3 degrees. This report presents a tabulation of the boundary layer profile characteristics in a format that facilitates comparison with theoretical computations. A description of the experiment and a brief analysis of the data are given. (Author)

19E. Fire Control and Bombing Systems

AD-A064 978/0GA PC **A02**/MF **A01**
Defence and Civil Inst. of Environmental Medicine, Downsview (Ontario).
Eyepiece Setting for the L1A1 Weapon Sight.
Technical rept.,
D. G. Pearce, R. G. Angus, and G. Goodfellow. Nov 78, 15p Rept no. DCIEM-TR-78X43

Descriptors: *Night sights, *Image intensification, *Setting(Adjusting), Target detection, Visibility, Performance(Human), Experimental data, Eye, Target acquisition.
Identifiers: *L-1A1 weapon sights, Starlight scope.

Three experiments were performed in order to examine the suggestion that relatively high negative settings (-1.75 to -2.00 dioptres) of the L1A1 image intensifier eyepiece yield optimum visual performance. Although detection and recognition performance did not vary greatly as a function of the eyepiece settings (10% or less), the data suggest that the traditional setting of -0.5 to -1.0 dioptres be used. The relatively large advantage to be gained from selecting the user of the L1A1 is noted. (Author)

19F. Guns

AD-A064 879/0GA PC **A04**/MF **A01**
Army Field Artillery School, Fort Sill, OK.
Reader's Guide to the Field Artillery Journal, Author and Subject Index, January, 1911 - December, 1939. Supplement.
Final rept.,
Morris Swett. 1 Jan 40, 70p Rept no. INDEX-3 Supplement to Volume 30, Number 1.

Descriptors: *Artillery, Indexes, Guns, Howitzers, Mortars, Field equipment, Army equipment, Periodicals.

This index to the Field Artillery Journal covers the period from January, 1911 through December, 1939. As such it is the first volume in the series. A subsequent index covering the period from 1940 through 1976 carries the AD number: A053085/7GA. This index was compiled by the library's namesake. MSG Swett, 1888-1966, served as the school's first librarian from 16 July 1915 to 30 Nov 1954. Throughout emphasis is on the principal subject of artillery. (Author)

AD-A065 460/8GA PC **A02**/MF **A01**
Rock Island Arsenal, IL. Arsenal Operations Directorate.
Fine Blanking Small Caliber Weapon Parts.
Final rept.,
John Jugenheimer. Nov 78, 24p Rept no. AOD-TR-78-001

Descriptors: *Small arms, *Weapons, Feasibility studies, Cost analysis, Alloys, Steel.
Identifiers: *Fine blanking, *Fabrication.

The objective of this project was to investigate the feasibility of fine blanking small weapon components to close tolerances. Of particular concern was the applicability of the process to higher alloy materials. Eight parts which represented a variety of size, shape, thickness and material were selected. Fine blanking dies and a sample lot of blankings were produced for each part. Five of the test parts were blanked satisfactorily. Two parts could be produced satisfactorily by changing material thickness or blanked configuration. One part was unacceptable due to extensive tears. Fine blanking presses and dies are high cost items. Average tooling cost was $7,922 per die set and equipment costs may be as high as $490,000. The average cost reduction was $5.19 per part. Fine blanking is an effective and cost reducing process when properly utilized. High carbon alloy steels can be successfully fine blanked. Material must be properly annealed as hardness is critical. The fine blanking process is applicable to the production of ordnance parts. However, large production quantities are required to realize an economic advantage. (Author)

20. PHYSICS

20A. Acoustics

AD-A064 864/2GA PC **A05**/MF **A01**
Naval Postgraduate School, Monterey, CA.
Experimental Study of Finite-Amplitude Standing Waves in Rectangular Cavities with Perturbed Boundaries.
Master's thesis,
Ender Kuntsal. Dec 78, 86p

Descriptors: *Acoustic waves, *Standing waves, Sound pressure, Waveforms, Amplitude, Perturbations, Geometric forms, Harmonics, Experimental data, Rectangular bodies, Cavities, Configurations, Boundaries, Acoustic resonance, Theses.

Finite-amplitude standing waves in air at ambient temperature contained within a tuneable, rigid-walled rectangular cavity were experimentally investigated. The effects of various geometrical perturbations on the harmonic content of the observed pressure waveform in the presence of degeneracies were compared to theory. Theory and experiment agreed qualitatively in that shape of the resulting curves have the correct form, but significant differences in the level of the second harmonic were frequently observed. (Author)

AD-A064 969/9GA PC **A02**/MF **A01**
Duke Univ., Durham, NC. Adaptive Signal Detection Lab.
Multipath Signal Processing Using a Vertical Array.
Technical rept.,
Charles S. Liu. Jul 77, 10p Rept no. TR-13
Contract N00014-75-C-0191

Descriptors: *Multipath transmission, *Signal processing, Underwater acoustics, Beam forming, Arrays, Detection, Estimates, Cross correlation, Underwater sound signals, Sound transmission, Antenna arrays, Receivers, Probability density functions.
Identifiers: Maximum likelihood estimation, Normal density functions, Bayesian analysis.

Performance of a vertical array for estimating multipath signal parameters and for detecting multipath Gaussian signals is investigated. For known multipath signal direction cases, the parameters of the signal from each individual path may be estimated so that the multipath signal cancellation can be eliminated. The performance of the Maximum Likelihood Estimates (MLE) for the signal parameters of individual paths are shown to be dependent on the angular separation of signal paths and array length. The maximum A Posteriori Probability Estimate (MAP) is considered when the signal statistics are known. The linear relationship between the MLE and MAP estimates is also shown. The Bayesian optimum array processor for detecting multipath Gaussian signals with known arrival angles not only has multiple beamformers pointing on multipath signal directions, but also has an additional structure which cross-correlates multiple beams. Optimum detection performance of a vertical array can be evaluated by an analytical method if the array has no more than four elements. With the aid of a digital computer the optimum performance can be calculated for an array of any size. The trade-off between the processor structure complexity and the detection performance is shown in terms of receiver operating characteristic (ROC) curves and processor block diagrams. A two-path example is shown for the performance comparison between optimum detector, single beamformer and double beamformer arrays. (Author)

AD-A065 000/2GA PC **A03**/MF **A01**
Naval Aerospace Medical Research Lab., Pensacola, FL.
The Landing Signal Officer: Auditory Aspects,
Ronald M. Robertson, Donald W. Maxwell, and Carl E. Williams. 11 Dec 78, 32p Rept no. NAMRL-1255

Descriptors: *Aircraft noise, *Exposure(Physiology), *Deafness, Hearing, Protective equipment, Thresholds(Physiology), Landing, Noise reduction, Signals, Military personnel.

Identifiers: *Carrier landings.

Landing signal officers (LSOs), exposed to high noise levels in the execution of their duties during carrier qualifications, do not routinely wear any hearing protective device. Noise measurements and noise exposure data are needed in order to determine whether such exposures can, over time, produce significant noise-induced hearing loss. Noise measurement data and noise exposure data obtained during carrier qualifications on board the USS Lexington (AVT-16) and the USS Forrestal (CVA-59) confirm a potential damage risk to hearing. The wearing of hearing protective devices is presently the only reasonable way to control the LSO's exposure to noise.

AD-A065 020/0GA PC **A22**/MF **A01**
Lockheed-Georgia Co., Marietta.
The Generation, Radiation and Prediction of Supersonic Jet Noise. Volume I.
Final technical rept. 1 Dec 75-1 Sep 78,
B. J. Tester, J. C. Morris, P. J. Lau, and H. K. Tanna. Oct 78, 509p LG78ER0262-VOL-1, AFAPL-TR-78-85-VOL-1
Contract F33615-76-C-2021
See also Volume 2, AD-A064 685. Continuation of Contracts F33615-71-C-1663 and F33615-73-C-2032.

Descriptors: *Jet engine noise, *Supersonic aircraft, Mathematical prediction, Computer programs, Noise generators, Acoustic attenuation, Turbulent flow, Structural response, Shock waves, Acoustic waves, Wave propagation, Laser velocimeters.

The work presented in this report forms a continuation of the fundamental studies on the generation and radiation of supersonic jet noise, reported in technical reports AFAPL-TR-72-53 (six volumes), AFAPL-TR-74-24, and AFAPL-TR-76-65 (four volumes). The total noise from a supersonic jet is taken to consist of contributions from three independent noise sources: (1) small-scale turbulent mixing noise, (2) noise from large-scale turbulence structure, and (3) shock-associated noise. The generation, radiation and prediction of each of these noise components is described in this report. In addition, the mean and turbulent flow characteristics of heated and unheated, subsonic and supersonic jets, measured by a laser velocimeter system, are also presented. Finally, a computer program for the prediction of jet noise, based on fundamental principles as far as possible at the present time, is presented and described in the form of a user's guide. A complete listing of this computer program is given in the Appendix volume (Volume 11) of this report. (Author)

AD-A065 159/6GA PC **A04**/MF **A01**
Institute for Acoustical Research, Miami, FL.
Experimental Evidence of the Importance of Sub-Bottom Refraction at 206 HZ.
Final rept.,
Benjamin Rosenberg, Luciano Dominijanni, and William Jobst. Sep 78, 55p Rept no. IAR-79001
Contract N62269-75-C-0305

Descriptors: *Underwater acoustics, Wave propagation, *Hydrophones, *Ocean bottom, Reflection, Low frequency, Oceanographic data, Amplitude, Experimental data, Refraction.

Acoustic data obtained using a bottom mounted 206 Hz projector and two bottom mounted receiving hydrophones 8.5 km and 21.8 km distant showed multiple acoustic paths with travel times approximately 30 percent faster than predicted for water-borne propagation. The presence of amplitude modulation with a 6.5 second period indicated that acoustic energy was reflected from the ocean surface before entering the high velocity limestone and coral bottom and being refracted to the receivers. Since received pulses showed little distortion, sub-bottom layers may be modeled as complex impedances at the 206 Hz frequency. The results demonstrate the importance of bottom propagated energy at low frequency and short range. (Author)

AD-A065 168/7GA PC **A05**/MF **A01**
Armament Development and Test Center, Eglin AFB, FL.
FOCUS - A Computerized Aid for Making Sound Propagation Forecasts.
Final rept.,
J. P. Kahler. Jan 79, 82p Rept no. ADTC-TR-79-8

Descriptors: *Sound transmission, *Ray tracing, *Computer applications, Blast waves, Overpressure, Data reduction, Computer graphics, Far field, Acoustic refraction, Acoustic velocity, Subroutines, Anomalies, Forecasting, Noise reduction, Explosions.
Identifiers: PDP-11/45 computers, Calcomp plotters, Caustics(Wave refraction).

A computerized aid for use in making predictions of far-field sound propagation in the atmosphere is described. The computer program, which was written for a PDP 11/45 minicomputer, traces acoustic rays through a moving, stratified, vertically-inhomogeneous atmosphere to provide the information needed to predict the locations and intensities of focused and lesser amplified propagated sound generated by high explosive detonations and other sources. It also provides locations of quiet zones. Output from the computer program consists of velocity-of-sound profiles, ray destination histrograms, focus factors, peak-to-peak pressure amplitudes, and ray destinations. The output can be produced in the form of CRT plots, Calcomp plots, and computer printouts. There are many optional outputs and several options on input data that can be selected by the user. The program assumes a point sound source that is surface based and does not consider terrain or earth curvature. Although these assumptions limit the horizontal range and situations under which it can be considered valid, the program should still be useful as an aid in producing forecasts for most surface-based sound sources other than those of unusually high TNT equivalent yields. (Author)

AD-A065 211/5GA PC **A02**/MF **A01**
Scripps Institution of Oceanography, San Diego, CA. Marine Physical Lab.
Depth Dependence of Ambient Noise in the Northeastern Pacific Ocean.
Summary rept.,
Gerald B. Morris. 25 Jul 77, 18p Rept no. MPL-U-48/77
Contract N00014-75-C-0749
Availability: Pub. in Jnl. of the Acoustical Society of America, v64 n2 p581-590 Aug 78.

Descriptors: *Underwater acoustics, *Ambient noise, Deep oceans, North Pacific Ocean, Hydrophones, Low frequency, Depth, Reprints.

No abstract available.

AD-A065 212/3GA PC **A02**/MF **A01**
Scripps Institution of Oceanography, San Diego, CA. Marine Physical Lab.
Quantitative Acoustics Near the Sea Floor.
Summary rept.,
Robert C. Tyce. 1977, 14p Rept no. MPL-U-36/77
Contract N00014-75-C-0704, Grant NSF-DES74-03690
Presented 16-18 Oct 77 Los Angeles, CA.
Availability: Pub. in Proceedings of the IEEE Oceans Conference, ch1272-4 p10A-1-10A-6 1977.

Descriptors: *Underwater acoustics, *Ocean bottom, Acoustic reflection, Hydrophones, Deep oceans, Oceanographic equipment.

No abstract available.

AD-A065 279/2GA PC **A02**/MF **A01**
Lamont-Doherty Geological Observatory, Palisades, NY.
Exploring the Atmosphere with Sonic Booms, or How I Learned to Love the Concorde,
William L. Donn. 1978, 13p LDGO-2742, ARO-14846.3-GS
Grant DAAG29-77-G-0131
Original contains color plates: All DDC and NTIS reproductions will be in black and white.
Availability: Pub. in American Scientist, v66 n6 p724-733 Nov-Dec 78.

Descriptors: *Sonic boom, *Shock waves, Atmospheres, Acoustic waves, Reprints.
Identifiers: Concorde aircraft.

No abstract available.

AD-A065 294/1GA PC **A03**/MF **A01**
SRI International, Arlington, VA.
Jason 1978 Sonic Boom Report.
Technical rept.,
G. J. MacDonald, S. M. Flatte, R. L. Garwin, and F. W. Perkins. Nov 78, 46p Rept no. SRI-JSR-78-09
Contract MDA903-78-C-0086, Grant ARPA Order-2504

Descriptors: *Sonic boom, Mathematical analysis, Thermosphere, Propagation, Shock waves, Models, Temperature, Pressure, Density.
Identifiers: *Aircraft.

Press reports of East Coast Mystery Booms has led to a number of studies of the propagation of shock waves into the thermosphere. This report shows that SST (Concorde) generated booms (a) do not heat the thermosphere, (b) do not create thermospheric wind, and (c) do not cause chemical changes in the thermosphere. (Author)

AD-A065 418/6GA PC **A03**/MF **A01**
Navy Underwater Sound Lab., New London, CT.
Continuous Gradient Ray Tracing System (CONGRATE) Bottom Loss Models.
Technical memo.,
Jeffrey S. Cohen, and Thelda A. Garrett. 5 Feb 70, 40p Rept no. USL-TM-2070-35-70

Descriptors: *Acoustic attenuation, Bottom loss, Ray tracing, Computer programs, Multipath transmission, Underwater acoustics, Least squares method, Angles, Grazing, Acoustic reflection.
Identifiers: CONGRATS Computer Program.

The fundamental CONGRATS programs, S0990 and S0991, have been revised to calculate bottom loss as a function of grazing angle. The bottom loss curves have been computed with frequency, MGS Acoustic Province, and both frequency and porosity as basic parameters. The bottom loss models have been described in detail, examples and comparisons have been provided, and the new input options have been explained. subroutines INPUT and BLOSS have been revised in order to accommodate the new bottom loss models, and a new subroutine, Subroutine BTMLOS, has been written to compute the bottom loss curves. These three routines are listed in the appendix. The ray plotting, eigenray generation, and eigenray processing functions of the CONGRATS series have not been altered in any way other than as described in this memorandum. It is hoped that the additional bottom loss options will be a convenience for users of the CONGRATS series.

AD-A065 498/8GA PC **A02**/MF **A01**
Stanford Univ., CA. Edward L. Ginzton Lab.
An Angular-Spectrum Approach to Contrast in Reflection Acoustic Microscopy,
Abdullah Atalar. 19 Dec 77, 12p GL-2759, AFOSR-TR-79-0103
Grant AFOSR-77-3455
Availability: Pub. in Jnl. of Applied Physics, v49 n10 p5130-5139 Oct 78.

Descriptors: *Acoustic signatures, *Surface properties, Crystal structure, Scanning, Microscopy, Acoustic lenses, Reprints.

No abstract available.

N79-19812/3GA PC **A17**/MF **A01**
Lockheed-Georgia Co., Marietta.
The Noise and Flow Characteristics of Inverted-Profile Coannular Jets.
H. K. Tanna, B. J. Tester, and J. C. Lau. Feb 79, 382p NASA-CR-158995
Contract NAS1-15018

Descriptors: *Annular nozzles, *Coaxial flow, *Jet aircraft noise, *Jet flow, *Turbulent jets, Laser doppler velocimeters, Noise generators, Noise reduction, Shock wave profiles.
Identifiers: *Noise pollution.

For abstract, see STAR 1710

N79-19813/1GA PC **A04/MF A01**
National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
Fluctuating Surface Pressure and Acoustic Radiation for Subsonic Normal Jet Impingement.
J. S. Preisser. Mar 79, 56p NASA-TP-1361, L-12412

Descriptors: *Jet impingement, *Pressure, *Sound waves, *Subsonic speed, *Variations, Far fields, Flat surfaces, Flow distribution, Mach number, Sound pressure.

For abstract, see STAR 1710

N79-19814/9GA PC **A04/MF A01**
MAN-Acoustics and Noise, Inc., Seattle, WA.
A Commercial Airport Noise Environment: Measurement, Prediction and Control.
Final Report.
J. E. Mabry, and B. U. Sullivan. Feb 79, 72p NASA-CR-3107, MAN-1023-B
Contract NAS1-14404

Descriptors: *Aircraft noise, *Airports, *Noise measurement, *Noise reduction, Computation, Data bases, Predictions, Takeoff.
Identifiers: *Noise pollution.

For abstract, see STAR 1710

N79-19815/6GA PC **A07/MF A01**
United Technologies Research Center, East Hartford, CT.
Airframe Noise Component Interaction Studies.
Final Report.
M. R. Fink, and R. H. Schlinker. Mar 79, 138p NASA-CR-3110, R78-912996-12
Contract NAS1-15083

Descriptors: *Aerodynamic noise, *Airframes, *Landing gear, *Leading edges, *Noise measurement, *Structural members, *Trailing-edge flaps, Airspeed, Data acquisition, Far fields, Noise spectra, Wind tunnel tests.

For abstract, see STAR 1710

20B. Crystallography

AD-A064 844/4GA PC **A03/MF A01**
IBM Thomas J. Watson Research Center., Yorktown Heights, NY.
Optical Bi-Refringent Technique in Defect Characterization.
Final rept. 1 Mar 77-30 Sep 78,
P. Chaudhari. 30 Nov 78, 36p AFOSR-TR-79-0041
Contract F49620-77-C-0060

Descriptors: *Crystal defects, *Birefringence, Nondestructive testing, Optical detection, Strain(Mechanics), Gallium phosphides, Silicon, Garnet, Stress analysis, Dislocations.

Defects in GaP, Garnets, and Si have been examined and characterized by stress induced optical bi-refringence. This technique is explored in examining devices and it is suggested that its utility lies in the early stages of device fabrication rather than towards the end. (Author)

AD-A065 407/9GA PC **A02/MF A01**
Massachusetts Inst. of Tech., Lexington. Lincoln Lab.
Enhanced Heteroepitaxy.
Semiannual technical summary. 1 Jan-30 Jun 78,
Alan L. McWhorter. 30 Jun 78, 11p ESD-TR-78-364
Contract F19628-78-C-0002, ARPA Order-3336

Descriptors: *Epitaxial growth, Silicon dioxide, Silicon nitrides, Thin films, Single crystals, Liquid crystals, Crystal substructure, Surface properties, Ions, Etching, Holography, Lithography, Heterogeneity, Abstracts.

Progress in research on a new method for controlling the crystallographic orientation of overlayer films using submicrometer-resolution surface-relief structures is reported. Abstracts of two theses on topographical control of overlayer orientation are included. One deals with orientation of solid crystals, while the other deals with orientation of liquid crystals. (Author)

20D. Fluid Mechanics

AD-A064 849/3GA PC **A04/MF A01**
Arnold Engineering Development Center, Arnold AFS, IN.
Holographic Interferometry Measurements of Subsonic Turbulent Boundary Layers.
Final rept. Oct 76-Sep 77,
D. W. Sinclair. Feb 79, 55p Rept no. AEDC-TR-78-62
Prepared in cooperation with ARO, Inc., Tullahoma, TN.

Descriptors: *Turbulent boundary layer, Holography, Subsonic flow, Optical interferometers, Pulsed lasers, Ruby lasers, Beam splitting, Experimental data, Data reduction, Density, Profiles, Wind tunnel tests.

Laser holographic interferometry was applied to the measurement of density profiles of two-dimensional planar turbulent boundary layers on the wall of the Acoustic Research Tunnel (ART) at the Arnold Engineering Development Center (AEDC). Holograms were produced at Mach numbers 0.50 and 0.65 by the finite fringe, single-plate, dual-exposure method. The reconstructed image from this type of hologram contains fringes that are shifted relative to a reference fringe by an amount that is proportional to the difference in the densities at the two points. Therefore, it was possible to determine the density profiles by measuring the fringe shifts appearing in the reconstructed images. The results of two velocity-temperature relations are presented, and compared to data obtained by pitot, hot-wire, and split-film probes. A description of the experimental facility, hardware for data acquisition, data reduction methods, and a discussion of the problems encountered in the holographic interferometry technique are presented.

AD-A064 921/0GA PC **A07/MF A01**
Iowa Inst. of Hydraulic Research, Iowa City.
Thick Axisymmetric Turbulent Boundary Layer and Wake of a Low-Drag Body.
Final rept.,
Yu-Tai Lee. Dec 78, 139p
Contract N00014-75-C-0273
Doctoral thesis.

Descriptors: *Turbulent boundary layer, Wake, Bodies of revolution, Axially symmetric flow, Aerodynamic drag, Pressure distribution, Velocity, Profiles, Reynolds number, Pressure gradients, Differential equations, Kinetic energy, Inviscid flow, Iterations, Theses.

Detailed measurements of pressure distributions, mean velocity profiles and Reynolds stresses were made in the thick, axisymmetric boundary layer and the near wake of a low-drag body of revolution. These measurements shed some light on the joint influence of transverse and longitudinal surface curvatures and pressure gradients on the boundary-layer development and on the manner in which an axisymmetric boundary layer becomes a fully-developed wake. The present data have been used to provide an independent check on the accuracy of the simple integral method proposed by Patel, and its extension to the calculation of the near wake made by Nakayama, Patel and Landweber. Calculations have also been performed using the differential equations of the thick axisymmetric turbulent boundary layer and a rate equation for the Reynolds stress derived from the turbulent kinetic-energy equation along the lines suggested by Bradshaw and others. It is shown that the boundary layer in the tail region of a body of revolution is dominated by the extra strain rates arising from longitudinal and transverse surface curvatures. A new differential method is incorporated into the iterative procedure developed by Nakayama, Patel and Landweber for the solution of the interaction between the boundary layer, the wake and the external inviscid flow. The results of the iterative method have been compared with the experimental data obtained from the present low-drag body and those obtained earlier on a modified spheroid to demonstrate agreement. (Author)

AD-A064 931/9GA PC **A05/MF A01**
Naval Ocean Systems Center, San Diego, CA.
A Computer Program Package for Proving Input to the Douglas Three-Dimensional Potential Flow Program: A User's Manual.
Final rept.,
T. S. Mautner. 30 Nov 78, 89p Rept no. NOSC/TR-352

Descriptors: *Potential flow, Computer program documentation, Bodies, Three dimensional, Axisymmetric, Geometric forms, Cartesian coordinates, Contours, Appendages, Velocity, Profiles, Computer programs, Programming manuals.

This report documents the procedures for using a computer program package designed to calculate and format the coordinates required as input to the Douglas Three-Dimensional Potential Flow Program. The programs calculate the three-dimensional coordinates for axisymmetric bodies, with and without appendages, and the radial and angular distribution of off-body points required to determine velocity profiles for propeller thrust deduction calculations. (Author)

AD-A064 967/3GA PC **A08/MF A01**
Toronto Univ., Downsview (Ontario). Inst. for Aerospace Studies.
Regions and Transitions of Nonstationary Oblique Shock-Wave Diffractions in Perfect and Imperfect Gases.
Interim rept. 1 Feb 78-31 Jan 79,
G. Ben-Dor. Aug 78, 157p UTIAS-232, AFOSR-TR-79-0063
Grant AFOSR-77-3303

Descriptors: *Shock waves, *Diffraction, Shock tubes, High density, Variations, Gas flow, Optical detection, Interferometry, Theses, Canada.
Identifiers: Mach-Zehnder interferometers.

The diffraction of shock waves (2 < or = M sub s < or = 8) in perfect and imperfect nitrogen and argon by sharp compressive corners (2 deg < or = Theta sub w < or = 60 deg) were investigated analytically and experimentally. It is shown that seven shock-wave diffraction domains exist in nitrogen and six in argon in the ranges 1 < or = M subs < or = 10 and 0 deg < or = Theta sub w < or = 90 deg. The domains consist of the four well-known shock wave reflections, i.e., regular reflection (RR), single-Mach (SMR), complex-Mach (CMR) and double-Mach (DMR) reflections. All the transition boundaries between these regions were established analytically and substantiated by the present experimental results as well as the data from other sources. Over 100 experiments were conducted in the UTIAS 10 x 18 cm Hypervelocity Shock Tube equipped with a 23-cm dia field of view Mach-Zehnder interferometer equipped with a dual-frequency laser light source. It is shown that real-gas effects have a significant influence on the size of the regions and their transition boundaries. Some comparison between steady and nonstationary reflections are made and discussed. Isopycnics (lines of constant density) as well as density distributions along the wedge surface are presented for the various diffraction processes and their differences and similarities are discussed. (Author)

AD-A065 012/7GA PC **A11/MF A01**
Lockheed Missiles and Space Co., Inc., Sunnyvale, CA.
Vortex-Induced Asymmetric Loads on Slender Vehicles.
Final technical rept.,
Lars E. Ericsson, and J. Peter Reding. Jan 79, 237p Rept no. LMSC-D630807
Contract N60921-77-C-0234

Descriptors: *Aerodynamic loading, *Vortices, *Boundary layer transition, Slender bodies, Cylindrical bodies, Airframes, Two dimensional flow, Three dimensional flow, Asymmetry, Aerodynamic stability, Limitations, Static loads, Dynamic loads, Reynolds number, Pitch(Motion), Flow separation, Coupling(Interaction), Guided missiles, Military aircraft.
Identifiers: Coning(Aerodynamics).

The steady and unsteady vortex-induced asymmetric loads on slender vehicles were investigated. The study reviewed pertinent two- and three-

dimensional data; developed analytic means for predicting the upper limit for vortex-induced asymmetric loads; and assessed the importance of these loads to the vehicle dynamics of slender bodies of revolution. The study showed boundary layer transition to have a dominant influence on static and dynamic vortex-induced loads. The predicted upper limit for vortex-induced asymmetric loads bounds all available experimental data from subcritical to supercritical Reynolds numbers. The most powerful dynamic effect is that of the moving wall at the separation point, which has a wall-jet-like effect on the boundary layer separation and transition. Preliminary experimental results indicate that because of this effect the dynamic stability parameters due to pitching and coning can be one order of magnitude larger than those occurring in attached flow at lower angles-of-attack. A very important effect of asymmetric vortices existing at high angles-of-attack is to provide a coupling mechanism at zero sideslip between longitudinal and lateral degrees of freedom. As these cross coupling effects are very large, highly nonlinear, often discontinuous and associated with hysteresis effects, with especially large impact on the vehicle dynamics, they are of great concern to missile and aircraft designers.

AD-A065 052/3GA PC **A02**/MF **A01**
Arizona Univ., Tucson. Dept. of Aerospace and Mechanical Engineering.
Focusing of Weak Shock Waves at an Arete,
M. S. Cramer, and A. R. Seebass. 28 Jun 76, 15p
Contract N00014-76-C-0182
Availability: Pub. in Jnl. of Fluid Mechanics, v88 pt2 p209-222 1978.

Descriptors: *Shock waves, *Transonic flow, Wavefronts, Focusing, Ridges, Equations of motion, Transonic characteristics, Perturbations, Boundary value problems, Asymptotic series, Reprints.

No abstract available.

AD-A065 131/5GA PC **A03**/MF **A01**
Princeton Univ., NJ. Dept. of Mechanical and Aerospace Engineering.
Supersonic, High Reynolds Number Flow Over a Tangent Ogive Cylinder at Small Angles of Attack. An Experimental Study and Comparison with Theory.
Interim rept.,
D. S. Dolling, and S. M. Bogdonoff. Jan 79, 39p
MAE-1421, ARO-14254.1-E
Grant DAAG29-77-G-0234

Descriptors: *Supersonic flow, *Boundary layer transition, *Ogives, Cylindrical bodies, Tangents, Angle of attack, Low angles, Wind tunnel models, Pressure distribution, Surfaces, Nose tips, Reynolds number, High rate, Experimental data, Comparison, Computerized simulation, Aeroballistics, Flow fields, Free stream.
Identifiers: Velocity profiles.

An experimental investigation was made of flow over a tangent ogive cylinder model at small angle of attack. The model was approximately 10 calibers (50cm, 20in.) long with a 3 caliber nose. Surface pressure distributions have been measured in both the circumferential and axial directions and boundary layer pitot surveys made at four stations along with wind and lee sides of the cylinder. Over the entire angle of attack range tested, 0 through 5 deg, no boundary layer separation was observed. All the measurements were made at a nominal freestream Mach number of 3, a unit Reynolds number of 6.2 x 10 to the 7th power/m (1.6 million/in.) and with near adiabatic wall conditions. At these high Reynolds numbers, natural boundary layer transition occurred, and in all cases was observed close to the nose tip. The measurements were compared with predictions from a boundary layer based computer code developed by Sturek, et al, at the U.S. Army Ballistic Research Laboratories. Pressure distributions agree well with the predictions. The experimental and computed velocity profiles have some common trends but there exist significant discrepancies between them. In a general sense, the computed and measured profiles have fundamentally different shapes and their downstream development is not accurately modelled, particularly on the windside.

AD-A065 132/3GA PC **A04**/MF **A01**
California Univ., Berkeley. Dept. of Mechanical Engineering.
On the Applicability of Directed Fluid Jets to Newtonian and Non-Newtonian Flows.
Technical rept.,
P. M. Naghdi. Jan 79, 53p Rept no. UCB/AM-79-1
Contract N00014-76-C-0474

Descriptors: *Nonnewtonian fluids, *Jet flow, Pipes, Viscoelasticity, Transitions, Turbulence, Three dimensional flow, Rheology, Computations, Taylors series.
Identifiers: Poiseuille flow, *Pipe flow.

This paper elaborates on the applicability of a direct formulation of the theory of jets to Newtonian and non-Newtonian fluid flow problems. Following a general discussion of the nature of direct theories, we record the basic equations of the theory of directed curves for any finite number of directors. Reference is then made to some recent results for incompressible Newtonian viscous flows, including the problem of jet breakup. The major portion of the paper is concerned with application of the direct approach to an incompressible non-Newtonian Poiseuille flow in a circular pipe. The results are compared to those of the three-dimensional theory and are found to include the effect of normal force corresponding to the normal stress effect. (Author)

AD-A065 133/1GA PC **A02**/MF **A01**
Johns Hopkins Univ., Laurel, MD. Applied Physics Lab.
Incompressible Flows as a System of Conservation Laws with a Constraint,
Joel C. W. Rogers. 11 May 78, 23p Rept no. APL/JHU-REPRINT-2062
Contract N00024-78-C-5384
Presented at Institut de Recherche d'Automatique in Rocquencourt, 11 May 78, France.

Descriptors: *Incompressible flow, Hydrodynamics, Boundary value problems, Energy conservation, Algorithms, Water waves, Boundary layer, Boltzmann equation, Fluid flow, Stratification, Transonic flow.
Identifiers: Stefan problem.

Some inadequacies of conventional formulations of inviscid hydrodynamics with regard to the solution of free boundary problems are analyzed. An alternative algorithmic formulation which produces the flow field incrementally in time is proposed. In this formulation paramountcy is given to the equations of mass and momentum conservation, which are solved subject to a constraint on the density. Energy decay is possible. The new formulations is examined with regard to its consistency with standard formulations when flow quantities are sufficiently smooth. Extensions to the treatment of stratified incompressible flows and transonic flows are discussed. (Author)

AD-A065 252/9GA PC **A03**/MF **A01**
Lehigh Univ., Bethlehem, PA.
Flow of a Newtonian Fluid between Eccentric Rotating Cylinders and Related Problems,
J. Y. Kazakia, and R. S. Rivlin. 26 Jul 77, 40p
ARO-12381.7-M
Grants DAHC04-74-G-0176, NSF-MCS74-06958
Availability: Pub. in Studies in Applied Mathematics, v58 p209-247 1978.

Descriptors: *Couette flow, Momentum transfer, Force(Mechanics), Anomalies, Mathematical analysis, Reprints.
Identifiers: Annular configurations.

No abstract available.

AD-A065 387/3GA PC **A05**/MF **A01**
Nielsen Engineering and Research Inc., Mountain View, CA.
Further Laser Velocimeter Measurements of Slender-Body Wake Vortices.
Final technical rept. 7 Mar 77-7 May 78,
Richard G. Schwind, and Joseph Mullen, Jr. Aug 78, 90p Rept no. NEAR-TR-168
Contract DAAK40-77-C-0070

Descriptors: *Wake, *Slender bodies, Vortices, Bodies of revolution, Flow visualization, Laser velocimeters, Wind tunnel tests, Reynolds number, Ogives, Guided missiles, Aerodynamic forces, Flow separation, Cross flow.

The flow over an ogive-cylinder model with a length-to-diameter ratio of seven has been investigated at incompressible flow speeds. Forces and moments, surface flow visualization, and three-dimensional laser velocimeter measurements have been obtained a pitch angles of 22.5 and 37.5 deg. Forces and moments have been compared to data previously obtained over a wide range of Reynolds numbers with this model. Surface flow visualization shows a complicated pattern of multiple separation and attachment lines. Asymmetric breaks in the primary separation lines are believed to be associated with the tearing loose of attached vortex sheets and the subsequent formation of a new sheet. Three-dimensional laser velocimeter measurements were performed on the leeward side of the model at several cross sections and at X = 2.8, 4.9, and 6.3 for alpha = 371/2 deg. Vortical regions rapdily become more and more diffusive and asymmetric in nature with downstream distance. Crossflow vector plots do not show distinct vortex centers toward the rear of the model. (Author)

AD-A065 416/0GA PC **A03**/MF **A01**
Army Missile Research and Development Command, Redstone Arsenal, AL. Technology Lab.
Theoretical Analysis of the Flow Field Over a Family of Ogive Bodies. Supplement.
Technical rept.,
R. L. Richardson, and B. Z. Jenkins. 12 Jan 79, 35p Rept no. DRDMI-T-79-15
Supplement to Rept. no. DRDMI-TD-CR-77-5, AD-A048 477.

Descriptors: *Flow fields, *Ogives, Three dimensional flow, Ogives, Angle of attack, Mach number, Supersonic flow, Axially symmetric flow, Pressure distribution, Coefficients.
Identifiers: Wave drag, RAXBOD Computer Program.

Local body surface pressure coefficients and Mach numbers are presented for tangent ogive bodies at Mach numbers from 2 to 4.5 and at 0 and 2 deg angle-of-attack. These data were obtained using the US Army Missile Research and Development Command three-dimensional method of characteristics computer code. This volume is intended to supplement MIRADCOM Technical Report TD-CR-77-5, published August 1977. (Author)

AD-A065 443/4GA PC **A06**/MF **A01**
Iowa Inst. of Hydraulic Research, Iowa City.
An Analytical Solution of the Thick Axisymmetric Turbulent Boundary Layer on a Long Cylinder of Constant Radius.
Final rept.,
Nuray Denli. Dec 78, 109p
Contract N00014-75-C-0273

Descriptors: *Turbulent boundary layer, *Axially symmetric flow, Cylindrical bodies, Walls, Wake, Boundary layer flow, Shear stresses, Viscosity, Eddy currents, Mixing, Momentum transfer, Reynolds number, Theses.

Two similarity laws for a thick, axisymmetric, turbulent boundary layer on a long circular cylinder have been established. The validity of the assumption of constant-stress moment in the law-of-the-wall region is analyzed under the assumption of similarity. A new logarithmic mixing length, which takes into consideration the effect of transverse curvature on turbulence, is proposed for the law-of-the-wall region. With this logarithmic mixing-length models, the mean-flow momentum equation yields a law-of-the-wall relation in terms of the exponential integral in the logarithmic portion of the inner layer. Comparisons with available data and other proposed relations reveal that this logarithmic law gives a definite improvement. Also a mathematical explanation is given as to why the cylinder data do not deviate appreciably from the classical two-dimensional law-of-the-wall, even though it is observed that the turbulent characteristics, such as the size of large eddies and the turbulent intensities are much smaller than for a flat plate.

LA-UR-78-2813 PC **A02**/MF **A01**
Los Alamos Scientific Lab., NM.
Simplified Solution Algorithms for Fluid Flow Problems.
C. W. Hirt. 1978, 20p CONF-7810149-1
Contract W-7405-ENG-36
Numerical methods for partial differential equations seminar, Madison, WI, USA, 23 Oct 1978.

Descriptors: *Fluid mechanics, *Navier-stokes equation, Algorithms, Disturbances, Finite difference method, Incompressible flow, Numerical solution, Potential flow, Steady-state conditions.
Identifiers: ERDA/640410.

For abstract, see ERA citation 04:024768.

N79-18934/6GA PC **A17**/MF **A01**
Von Karman Inst. for Fluid Dynamics, Rhode-Saint-Genese (Belgium).
Compressible Turbulent Boundary Layers, Volume 1.
1976, 388p VKI-LECTURE-Ser-86-V-1
Seri-2. Conf-Lecture Held at Rhode Saint Genese, Belgium, 1-5 Mar. 1976.

Descriptors: *Compressible boundary layer, *Fluid dynamics, *Turbulent boundary layer, Computation, Data acquisition, Flow measurement, Heat transfer, Statistical analysis.
Identifiers: Belgium.

For abstract, see STAR 1710

N79-18939/5GA PC **A12**/MF **A01**
Von Karman Inst. for Fluid Dynamics, Rhode-Saint-Genese (Belgium).
Compressible Turbulent Boundary Layers, Volume 2.
1976, 269p VKI-LECTURE-Ser-86-V-2
Conf-Proc. Of Lecture Series Held 1-5 Mar. 1976.

Descriptors: *Compressible boundary layer, *Fluid dynamics, *Turbulent boundary layer, Computation, Hypersonic boundary layer, Numerical analysis, Shock layers, Shock wave interaction, Turbulence.
Identifiers: Belgium.

For abstract, see STAR 1710

N79-19266/2GA PC **A03**/MF **A01**
Virginia Polytechnic Inst. and State Univ., Blacksburg. Coll. of Engineering.
Nonlinear Interaction of Waves in Boundary-Layer Flows.
A. H. Nayfeh, and A. N. Bozatli. Feb 79, 31p
NASA-CR-158239, VPI-E-79-6
Grant NSG-1255, Contract NR PROJ. 061-201

Descriptors: *Boundary layer flow, Nonlinear systems, *Tollmein-schlichting waves, Amplitudes, Flat plates, Flow distribution, Frequencies, Numerical analysis, Wave interaction.

For abstract, see STAR 1710

N79-19279/5GA PC **A10**/MF **A01**
Von Karman Inst. for Fluid Dynamics, Rhode-Saint-Genese (Belgium).
Introduction to Rheology.
1976, 220p VKI-LECTURE-Ser-85
Conf-Lecture Held at Rhode Saint Genese, Belgium, 16-20 Feb. 1976.

Descriptors: *Fluid jets, *Fluid mechanics, *Industries, Nonnewtonian flow, *Rheology, Drag reduction, Heat transfer, Lubrication, Polymer physics.
Identifiers: Belgium.

For abstract, see STAR 1710

N79-19286/0GA PC **A17**/MF **A01**
Von Karman Inst. for Fluid Dynamics, Rhode-Saint-Genese (Belgium).
Gas-Solid Suspensions.
1976, 377p VKI-LECTURE-Ser-90
Conf-Lecture Held at Rhode Saint Genese, Belgium, 3-7 May 1976.

Descriptors: *Conferences, *Gas-solid interfaces, Lectures, *Mixtures, *Solid suspensions, Suspending(Mixing), Education, Fluid boundaries, Fluid flow, Suspensions, Transport properties.
Identifiers: *Meetings, Belgium.

For abstract, see STAR 1710

N79-19309/0GA PC **A02**/MF **A01**
Delft Hydraulics Lab. (Netherlands).
Air Entrainment in Siphons: Results of Tests in Two Scale Models and an Attempt at Extrapolation.
J. A. Casteleyn, P. Vangroen, and P. A. Kolkman. Nov 77, 10p PUBL-187
Conf-Presented at the 17TH Congr. Of the Intern. Assoc. For Hydraulic Res., Baden-Baden, Germany, F.R., 15-19 Aug. 1977.

Descriptors: *Air, *Entrainment, Extrapolation, Scale models, *Siphons, Structural design, Velocity distribution, Water.
Identifiers: Netherlands.

For abstract, see STAR 1710

SAND-78-8726 PC **A02**/MF **A01**
Sandia Labs., Livermore, CA.
Rayleigh Temperature Profiles in a Hydrogen Diffusion Flame.
J. R. Smith. Sep 78, 11p
Contract EY-76-C-04-0789

Descriptors: *Flames, *Hydrogen, Fluid mechanics, Laminar flow, Laser radiation, Rayleigh scattering, Temperature distribution.
Identifiers: ERDA/640410.

For abstract, see ERA citation 04:020678.

UCID-18053 PC **A02**/MF **A01**
California Univ., Livermore. Lawrence Livermore Lab.
Rational Procedure for Rezoning HEMP.
L. A. Glenn. 5 Feb 79, 17p
Contract W-7405-ENG-48

Descriptors: *Computer codes, *Hydrodynamics, Conservation laws, Coordinates, Energy, H codes, Linear momentum, Mass, Stresses.
Identifiers: ERDA/640420.

For abstract, see ERA citation 04:024771.

UCRL-Trans-11402 PC **A02**/MF **A01**
California Univ., Livermore. Lawrence Livermore Lab.
Differential Analyzers of Shock Fronts.
E. V. Vorozhtsov. 1972, 21p
Contract W-7405-ENG-48
A Kompleksy Programm Matematicheskoi Fiziki, pp 98-115.

Descriptors: *Detonation waves, *Fluid mechanics, Computer calculations, Cylindrical configuration, Finite difference method, Gases, Shock waves, Singularity, Viscosity, Wave propagation.
Identifiers: ERDA/640420, ERDA/658000, ERDA/450000, Translations, USSR.

For abstract, see ERA citation 04:024772.

20E. Masers and Lasers

AD-A064 913/7GA PC **A02**/MF **A01**
Cornell Univ., Ithaca, NY. Lab. of Atomic and Solid State Physics.
Laser Materials.
Final rept. 1 Oct 74-31 Dec 77,
Paul L. Hartman, and Herbert Mahr. 25 Oct 78, 9p
Contract N00014-75-C-0248

Descriptors: *Laser materials, Alkali metal compounds, Halides, Optical properties, Ultraviolet lasers, Dye lasers, Monochromators, X rays, Holography, Bibliographies.
Identifiers: Alkali halides.

After a period spanning over twenty years, ONR support on its Cornell Contract (Present 6N00014-75-C-0248) is being terminated. During that time a great deal has happened in science and in the National Support of Science. Not only has the Office of Naval Research undergone great changes in that time, but so also has the emphasis in this particular area, which ONR has helped to support over this long period of time. It was originally funded as research into the optical properties of alkali halides. Alkali halides at that time was a big area for Cornell solid state physics research. And for a long time that remained the emphasis in the work on the ONR Contract. This gradually changed and during recent years the work has been directed more toward the use of lasers and development in laser technology.

AD-A065 036/6GA PC **A02**/MF **A01**
Massachusetts Inst. of Tech., Lexington. Lincoln Lab.
Thermal-Blooming Compensation Using the CLASP System.
Journal article,
Charles A. Primmerman, Frederick B. Johnson, and Irving Wigdor. 31 Dec 77, 5p JA-4788, ESD-TR-78-354
Contract F19628-78-C-0002, ARPA Order-600
Availability: Pub. in Applied Optics, v17 n18 p2909-2912, 15 Sep 78.

Descriptors: *Thermal blooming, *Laser beams, Adaptive filters, Closed loop systems, Phase control, Slewing, Control systems, Reprints.
Identifiers: CLASP system.

No abstract available.

AD-A065 156/2GA PC **A06**/MF **A01**
Georgia Inst. of Tech. Atlanta. Dept. of Chemistry.
Selective Chemical Pumping of Electronic States and Formation and Deactivation Processes in Electronic Transition Chemically Pumped Lasers.
Final rept. 1 Sep 74-1 Oct 78,
James L. Gole. 1978, 114p AFOSR-TR-79-0102
Grant AFOSR-78-3515
Prepared in cooperation with Massachusetts Inst. of Tech., Cambridge. Dept. of Chemistry, Grant AFOSR-78-2758.

Descriptors: *Chemical lasers, Electron transfer, Excitation, Electronic states, Chemiluminescence, Visible spectra, Quenching(Inhibition), Energy transfer, Reaction kinetics, Quantum theory, Fabrication.

A variety of high temperature techniques are applied to the study of visible chemiluminescent phenomena over the pressure range .000001 to 100 torr in order to assess the applicability of several reaction systems for the development of visible chemicals lasers. Efforts have focused on selective formation of excited electronic states, the nature of electronic state interactions and the behavior of these states over a wide pressure range. In studying chemiluminescent spectra, efforts have concentrated on the determination of activation energies for excited state formation, the determination of excited state quantum yields, the determination of approximate radiative lifetimes for long-lived states, the assessment of rapid energy transfer routes among excited electronic states and the analysis of collisional quenching. Promising systems have been and are being explored in an exploding wire laser system. (Author)

AD-A065 241/2GA PC **A02**/MF **A01**
California Univ., Berkeley.
Optically Pumped GaAs-Ga(1-x)Al(x)As Half-Ring Laser Fabricated by Liquid-Phase Epitaxy over Chemically Etched Channels.
Dan Botez, Luis Figueroa, and Shyh Wang. 6 May 76, 4p AFOSR-TR-77-0245
Contracts F44620-71-C-0087, N00014-75-C-0420
Availability: Pub. in Applied Physics Letters, v29 n8 p502-504, 15 Oct 76.

Descriptors: *Gallium arsenides, Epitaxial growth, Liquid phases, Waveguides, Aluminum arsenides, Reprints.
Identifiers: *Semiconductor lasers, Gallium aluminum arsenides, Optical pumping, Ring lasers.

No abstract available.

AD-A065 242/0GA PC **A02**/MF **A01**
California Univ., Berkeley. Electronics Research Lab.
Efficient Generation of Continuously Tunable Coherent Radiation in the 2460-2650-A Spectral Range.
R. K. Jain, and T. K. Gustafson. 6 May 76, 3p
AFOSR-TR-77-0771
Contract F44620-76-C-0100

Availability: Pub. in IEEE Jnl. of Quantum Electronics, p555-556 Sep 76.

Descriptors: *Dye lasers, *Tunable lasers, Laser pumping, Adenosine phosphates, Thermal properties, Coherent optical radiation, Reprints.
Identifiers: *Ultraviolet lasers, Second harmonic generation, Near ultraviolet radiation.

No abstract available.

N79-19334/8GA PC **A03**/MF **A01**
Illinois Univ. at Urbana-Champaign.
An Experimental Investigation of (235U)F6 Fission Nuclear-Pumped Lasers.
Progress Report.
G. H. Miley. Feb 79, 28p NASA-CR-158162
Grant NSG-1547

Descriptors: *Uranium 235, Laser pumping, Metal vapor lasers, Nuclear fission, Uranium fluorides, Cryopumping, Gas lasers, Microcomputers, Pulsed lasers, Vacuum systems, Vapor pressure.
Identifiers: *Nuclear pumped lasers, *Uranium hexafluoride, Uranium hexafluoride lasers.

For abstract, see STAR 1710

PATENT-4 137 509 Not available NTIS
Department of the Navy Washington DC
Tunable Laser Based upon S2,Te2 and other Selected Dimers.
Patent,
Stephen R. Leone, and Kenneth G. Kosnik. Filed 2 May 77, patented 30 Jan 79, 7p AD-D005 814/9, PAT-APPL-793 214
Supersedes PAT-APPL-793 214-77, AD-D004 010.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $0.50.

Descriptors: *Patents, *Tunable lasers, *Laser pumping, Dimers, Tellurium, Vapors, Selenium, Ground state, Electronic states, Vibrational spectra, Rotation(Chemical bonds), Excitation.
Identifiers: PAT-CL-331-94.5, Sulfur.

Lasing can be achieved by pumping a laser cell containing a vapor formed predominantly of Group VI dimers such as S2,Te2,Se2,TeO,TeSe,SeS, from a ground electronic state to a selected vibrational-rotational level in a selected excited electronic state. The selected excited electronic state is one having allowed transitions relative to the ground electronic state and the selected level of the excited state is one that is below the dissociation limit of that state. Lasing transitions then occur between the selected excited state level and higher vibrational-rotational levels of the ground state. For example, lasing is achieved at S2(B-X) and at Te2 (A-X). (Author)

20F. Optics

AD-A064 889/9GA PC **A02**/MF **A01**
School of Aerospace Medicine, Brooks AFB, TX.
Shearing Interferometer with Scanned Photodiode Array and Microcomputer for Automatic Transparency Distortion Measurements.
Interim rept. Jun 76-Jul 78,
J. Taboada, and A. J. Duelm. 1978, 9p Rept no. SAM-TR-78-336
Availability: Pub. in Proceedings of the Society of Photo-Optical Instrumentation Engineers, v153 1978.

Descriptors: *Optical interferometers, *Windows, *Transparent panels, Line of sight, Transparence, Distortion, Reprints.
Identifiers: Shearing interferometers, Microcomputers, Photodiodes.

No abstract available.

AD-A065 023/4GA PC **A02**/MF **A01**
California Inst. of Tech., Pasadena. Div. of Chemistry and Chemical Engineering.
Light Scattering from Spheroids in Shear Flows. I. The Orientation Correlation,
Claude Cohen, and L. Gary Leal. 12 Oct 77, 10p
Contract N00014-77-C-0481
Prepared in cooperation with Cornell Univ., Ithaca, NY. School of Chemical Engineering.
Availability: Pub. in Jnl. of Chemical Physics, v68 n12 p5348-5356, 15 Jun 78.

Descriptors: *Light scattering, *Viscous flow, Shear properties, Polarization, Orientation(Direction), Brownian motion, Reprints.
Identifiers: Spheres.

No abstract available.

AD-A065 210/7GA PC **A02**/MF **A01**
City Coll., New York. Dept. of Physics.
Phase Determination by Conjugate Wave-Front Generation.
Technical rept.,
G. P. Agrawal. 7 Oct 77, 4p TR-13, ARO-13410.12-P
Grant DAAG29-76-G-0055
Availability: Pub. in Jnl. of the Optical Society of America, v68 n8 p1135-1136 Aug 78.

Descriptors: Coherent optical radiation, Phase studies, Wavefronts, Nonlinear systems, Fourier analysis, Reprints.
Identifiers: *Wave phases, *Phase measurement.

No abstract available.

AD-A065 216/4GA PC **A02**/MF **A01**
Brown Univ., Providence, RI.
Optical Properties of Amorphous Metallic Alloys,
E. Hauser, R. J. Zirke, J. Tauc, J. J. Hauser, and S. R. Nagel. 12 May 78, 5p ARO-13723.5-P
Grants DAAG29-76-G-0221, NSF-DMR77-09931
Prepared in cooperation with Bell Labs., Murray Hill, NJ and Chicago Univ., IL.
Availability: Pub. in Physical Review Letters, v40 n26 p1733-1736, 26 Jun 78.

Descriptors: *Alloys, Optical properties, *Amorphous materials, Metal films, Gold, Silicon, Reprints.

No abstract available.

AD-A065 219/8GA PC **A02**/MF **A01**
Rensselaer Polytechnic Inst., Troy, NY. Dept. of Electrical and Systems Engineering.
Fourier Transform Properties of Acousto-Optic Lens.
Technical rept.,
F. M. Mohammed Ayub, and P. Das. 10 Mar 78, 6p Rept no. MA-ONR-21
Contract N00014-75-C-0772
Availability: Pub. in Optics Communications, v26 n2 p161-164 Aug 78.

Descriptors: *Acoustooptics, Acoustic lenses, Optical communications, Fourier transformation, Signal processing, Reprints.

No abstract available.

AD-A065 239/6GA PC **A02**/MF **A01**
Texas Tech. Univ., Lubbock. Dept. of Electrical Engineering.
Ambiguity Function Display. An Improved Coherent Processor,
Robert J. Marks, II, John F. Walkup, and Thomas F. Krile. 2 Aug 76, 6p AFOSR-TR-77-0762
Grant AFOSR-75-2855
Prepared in cooperation with Rose-Hulman Inst. of Tech., Terre Haute, IN. Dept. of Electrical Engineering.
Availability: Pub. in Applied Optics, v16 n3 p746-750 Mar 77.

Descriptors: *Optical processing, Information processing, Coherent optical radiation, Signal processing, Real time, Reprints.
Identifiers: Ambiguity functions.

No abstract available.

AD-A065 246/1GA PC **A02**/MF **A01**
Rochester Univ., NY.
On the Existence of a Radiance Function for a Partially Coherent Planar Source,
Ari T. Friberg. 1977, 8p ARO-14074.4-P
Grant DAAG29-77-G-0006
Availability: Pub. in Coherence and Quantum Optics IV, p449-455 1978.

Descriptors: *Coherent optical radiation, *Radiance, Quantum theory, Radiometry, Distribution functions, Reprints.

No abstract available.

AD-A065 278/4GA PC **A02**/MF **A01**
Massachusetts Univ., Amherst.
Recent Studies of Light Scattering from Polymer Films,
Richard S. Stein, A. Misra, T. Yuasa, and F. Khambatta. 1977, 13p ARO-12942.12-C
Grant DAAG29-75-G-0135
Availability: Pub. in Pure and Applied Chemistry, v49 p915-928 1977.

Descriptors: *Light scattering, *Polymers, Films, Crystal structure, Thermal properties, Phase transformations, Reprints.

No abstract available.

AD-A065 317/0GA PC **A02**/MF **A01**
Moore School of Electrical Engineering, Philadelphia, Pa.
Comments on 'A New Imaging Principle',
W. M. Waters, and N. H. Farhat. 24 Feb 78, 3p ARO-13366.8-EL
Grant DAAG29-76-G-0230
Availability: Pub in Proceedings of the IEEE, v66 n5 p609-610 May 78.

Descriptors: *Bistable devices, *Image processing, Coherent radiation, Transmitter receivers.
Identifiers: Range resolution, Swept frequency imaging.

No abstract available.

AD-A065 371/7GA PC **A02**/MF **A01**
Pennsylvania Univ., Philadelphia.
Surface Electromagnetic-Wave Enhancement of Nonlinear Optical Phenomena in Metals,
Y. J. Chen, and E. Burstein. 3 Dec 76, 11p ARO-14332.2-P
Grant DAAG29-76-G-0325
Summary in Spanish and Russian.
Availability: Pub. in Il Nuovo Cimento, v39B n2 p807-816, 11 Jun 77.

Descriptors: *Raman spectra, Surface waves, Nonlinear propagation analyses, Harmonic analysis, Optical processing, Metals, Surface properties, Phonons, Energy Transfer, Reprints.
Identifiers: Second harmonic generation, Nonlinear optics, Electromagnetic radiation.

No abstract available.

AD-A065 389/9GA PC **A02**/MF **A01**
Texas Tech. Univ., Lubbock. Dept. of Electrical Engineering.
Astigmatic Coherent Processor Analysis,
Robert J. Marks, II, and Steven V. Bell. 15 Jul 77, 4p AFOSR-TR-79-0142
Grant AFOSR-75-2855
Availability: Pub. in Optical Engineering, v17 n2 p167-169 Mar-Apr 78.

Descriptors: *Optical processing, *Information processing, Coherent optical radiation, Space perception, Fourier analysis, Astigmatism, Reprints.

No abstract available.

AD-A065 390/7GA PC **A02**/MF **A01**
Carnegie-Mellon Univ., Pittsburgh, PA. Dept. of Electrical Engineering.
Phase Error Model for Simple Fourier Transform Lenses,
David Canasent, and Thanh Luu. 12 Sep 77, 9p AFOSR-TR-79-0144
Grant AFOSR-75-2851
Availability: Pub. in Applied Optics, v17 n11 p1701-1708, 1 Jun 78.

Descriptors: *Optical lenses, *Fourier analysis, Optical analysis, Phase studies, Error analysis, Reprints.
Identifiers: Mathematical models.

No abstract available.

AD-A065 391/5GA PC **A02**/MF **A01**
Massachusetts Inst. of Tech., Cambridge. Dept. of Electrical Engineering and Computer Science.
Microchannel Spatial Light Modulator,
C. Warde, A. D. Fisher, D. M. Cocco, and M. Y. Burmawi. 11 Jul 78, 4p AFOSR-TR-79-0143
Grant AFOSR-77-3328
Availability: Pub. in Optics Letters, v3 p196-198 Nov 78.

Descriptors: *Optical processing, *Light modulators, Addressing, Low light levels.
Identifiers: Optical modulators.

No abstract available.

N79-19855/2GA PC **A03**/MF **A01**
California Univ., San Diego, La Jolla. Dept. of Applied Physics and Information Science.
Studies in Optical Parallel Processing.
Final Report.
S. H. Lee. 31 Oct 78, 41p NASA-CR-158237
Contract NGR-05-009-264

Descriptors: *Optical data processing, *Parallel processing(Computers), Electro-optics, Fiber optics, Image processing, Analog to digital converters, Binary data, Fabry-Perot interferometers, Integrated circuits, Logic circuits, Refractivity.

For abstract, see STAR 1710

20G. Particle Accelerators

BNL-24378 PC **A02**/MF **A01**
Brookhaven National Lab., Upton, NY.
Polarized Proton Acceleration.
E. D. Courant. 16 Jan 78, 13p CONF-780145-4
Contract EY-76-C-02-0016
Orbis scientiae conference, Coral Gables, FL, USA, 15 Jan 1978.

Descriptors: *Proton beams, Gev range 10-100, Hydrogen ions 1 minus, Milli amp beam currents, Polarized beams, Spin orientation.
Identifiers: ERDA/430301.

For abstract, see ERA citation 04:020206.

BNL-25173 PC **A02**/MF **A01**
Brookhaven National Lab., Upton, NY.
Gabor Lenses: Experimental Results at Brookhaven.
R. M. Mobley. 1978, 9p CONF-780979-3
Contract EY-76-C-02-0016
Heavy ion fusion workshop, Chicago, IL, USA, 19 Sep 1978.

Descriptors: *Electromagnetic lenses, Beam focusing magnets, Electrostatic lenses, Focusing, Ion beams, Performance, Proton beams, Xenon ions.
Identifiers: ERDA/430200, ERDA/700208.

For abstract, see ERA citation 04:024353.

BNL-50872 PC **A02**/MF **A01**
Brookhaven National Lab., Upton, NY.
Design of Quarter Wavelength Resonator for 2 Megahertz Heavy Ion Linear Accelerator.
J. T. Keane. 12 Jul 78, 17p
Contract EY-76-C-02-0016

Descriptors: *Cavity resonators, *Hilacs, Design, Heavy ions, Power supplies, Power transmission lines, Rf systems.
Identifiers: ERDA/430100.

For abstract, see ERA citation 04:024344.

CONF-771206-24 PC **A02**/MF **A01**
General Electric Co., St. Petersburg, FL. Neutron Devices Dept.
Analyzing Randomly Occurring Voltage Breakdowns.
C. W. Wiltshire. 1977, 4p
Contract EY-76-C-04-0656
Digital signal processing symposium, Albuquerque, NM, USA, 6 Dec 1977.

Descriptors: *Neutron sources, Accelerators, Aging, Breakdown, Diagnostic techniques, Performance testing, Quality control, Sealed sources.
Identifiers: ERDA/430100, ERDA/070204.

For abstract, see ERA citation 04:024345.

CONF-780826-19 PC **A03**/MF **A01**
Fermi National Accelerator Lab., Batavia, IL.
Tevatron.
R. Yamada. 1978, 28p
Contract EY-76-C-02-3000
19. conference on high energy physics, Tokyo, Japan, 23 Aug 1978.

Descriptors: *Fermilab accelerator, Accelerator facilities, Beam transport, Colliding beams, Electron cooling, Proton beams, Superconducting magnets, Tev range.
Identifiers: ERDA/430200, ERDA/430100, ERDA/430303.

For abstract, see ERA citation 04:024354.

CONF-780952-7 PC **A02**/MF **A01**
Fermi National Accelerator Lab., Batavia, IL.
Superconducting Synchrotron Power Supply and Quench Protection Scheme.
R. Stiening, R. Flora, R. Lauckner, and G. Tool. 1978, 3p
Contract EY-76-C-02-3000
Applied superconductivity conference, Pittsburgh, PA, USA, 25 Sep 1978.

Descriptors: *Superconducting magnets, *Synchrotrons, Design, Power supplies.
Identifiers: ERDA/430300, ERDA/420201.

For abstract, see ERA citation 04:020205.

CONF-780957-2 PC **A02**/MF **A01**
Oak Ridge National Lab., TN.
Fast Neutron Dose Equivalent Rates in Heavy Ion Target Areas.
C. B. Fulmer, H. M. Butler, W. F. Ohnesorge, and S. W. Mosko. 1978, 3p
Contract W-7405-ENG-26
Conference on cyclotrons and their applications, Bloomington, IN, USA, 18 Sep 1978.

Descriptors: *Beam dumps, *Heavy ion accelerators, *Target chambers, Carbon ions, Dose rates, Fast neutrons, Heavy ions, Ion beams, Neon ions, Neutron dosimetry, Nitrogen ions, Oxygen ions, Radiation hazards.
Identifiers: ERDA/430303, ERDA/655003.

For abstract, see ERA citation 04:024361.

LA-UR-78-2649 PC **A02**/MF **A01**
Los Alamos Scientific Lab., NM.
Remote Examination and Disassembly of a Biomedical Target at LASL.
J. H. Cook, F. H. Newbury, and D. S. Shaffer. 1978, 22p CONF-781105-50
Contract W-7405-ENG-36
ANS meeting, Washington, DC, USA, 12 Nov 1978.

Descriptors: *Lampf linac, *Targets, Cooling systems, Failures, Leaks, Pion beams, Radiotherapy, Remote handling.
Identifiers: ERDA/430303.

For abstract, see ERA citation 04:024362.

LA-UR-78-2721 PC **A02**/MF **A01**
Los Alamos Scientific Lab., NM.
Microprocessor-Based Controller for a Liquid Hydrogen Target Refrigerator.
A. J. Gjovig, J. D. Little, and J. K. Novak. 1978, 4p CONF-781033-14
Contract W-7405-ENG-36
IEEE nuclear science symposium, Washington, DC, USA, 18 Oct 1978.

Descriptors: *Lampf linac, *Target chambers, Control systems, Hydrogen, Liquids, Performance, Refrigerating machinery, Ultralow temperature.
Identifiers: ERDA/430303.

For abstract, see ERA citation 04:024363.

LA-tr-78-66 PC **A02**/MF **A01**
Gosudarstvennyi Komitet po Ispol'zovaniyu Atomnoi Energii SSSR, Serpukhov. Inst. Fiziki Vysokikh Energii.
Institute of High Energy Physics 76 GeV Proton Synchrotron.
Yu. M. Ado, A. A. Zhuraviev, V. I. Zaytsev, V. I. Kotov, and K. P. Myznikov. 1978, 15p CONF-741112-10(Trans)
Contract W-7405-ENG-36
A All-Union conference on charged particle accelerators, Moscow, USSR, Nov 18–20, 1974, pp 36-43.All-union national conference on charged particle accelerators, Moscow, USSR, 18 Nov 1974.

Descriptors: *Serpukhov synchrotron, Accelerator facilities, Beam injection, Gev range, Performance.
Identifiers: ERDA/430100, ERDA/430300, Translations, USSR.

For abstract, see ERA citation 04:024352.

LBL-7735 PC **A02**/MF **A01**
California Univ., Berkeley. Lawrence Berkeley Lab.
Cryogenic Vacuum Pumping at the LBL 88-Inch Cyclotron.
D. Elo, D. Morris, D. J. Clark, and Sep 78, 6p CONF-780957-5
Contract W-7405-ENG-48
Conference on cyclotrons and their applications, Bloomington, IN, USA, 18 Sep 1978.

Descriptors: *Uclrl cyclotrons, Cryopumps, Design, Performance, Vacuum systems.
Identifiers: ERDA/430303, ERDA/420700.

For abstract, see ERA citation 04:024364.

LBL-8304 PC **A02**/MF **A01**
California Univ., Berkeley. Lawrence Berkeley Lab.
Geometric Aberrations in Final Focussing for Heavy Ion Fusion.
D. Neuffer. Nov 78, 14p
Contract W-7405-ENG-48

Descriptors: *Heavy ion accelerators, Analytical solution, Beam optics, Focusing, Ion beam targets, Ion beams.
Identifiers: ERDA/430200, ERDA/700208.

For abstract, see ERA citation 04:024356.

LBL-8328 PC **A02**/MF **A01**
California Univ., Berkeley. Lawrence Berkeley Lab.
Prototype CCD System for the Time Projection Chamber.
D. L. Fancher, K. L. Lee, J. Mallet, P. Martin, and G. Shapiro. Oct 78, 11p CONF-781033-22
Contract W-7405-ENG-48
IEEE nuclear science symposium, Washington, DC, USA, 18 Oct 1978, Portions of document are illegible.

Descriptors: *Time projection chambers, Accelerator facilities, Bevalac, Charge-coupled devices, Design, Multiwire proportional chambers, Performance testing, Time measurement.
Identifiers: ERDA/430303, ERDA/440104.

For abstract, see ERA citation 04:024365.

LBL-8351 PC **A02**/MF **A01**
California Univ., Berkeley. Lawrence Berkeley Lab.
Comparison of Instability Theory with Simulation Results.
L. J. Laslett, L. Smith, and I. Haber. Nov 78, 7p
Contract W-7405-ENG-48

Descriptors: *Beam transport, *Heavy ion accelerators, Analytical solution, Inertial confinement, Ion beams, Simulation, Stability.
Identifiers: ERDA/430200, ERDA/700208.

For abstract, see ERA citation 04:024357.

LBL-8494 PC **A03**/MF **A01**
California Univ., Berkeley. Lawrence Berkeley Lab.
Status Report on the Lawrence Berkeley Laboratory Heavy Ion Fusion Program.
D. Keefe, A. Faltens, and E. Hoyer. Nov 78, 27p CONF-780979-12
Contract W-7405-ENG-48
Heavy ion fusion workshop, Chicago, IL, USA, 19 Sep 1978.

Descriptors: *Heavy ion accelerators, Cost, Design, Inertial confinement, Planning, Research programs.
Identifiers: ERDA/430000, ERDA/700208.

For abstract, see ERA citation 04:024343.

LBL-8536 PC **A03**/MF **A01**
California Univ., Berkeley. Lawrence Berkeley Lab.
Accelerator Division Annual Report, January 1976–September 1977.
1977, 47p
Contract W-7405-ENG-48

Descriptors: *Berkeley synchrocyclotron, *Bevalac, *Bevatron, *Escar, *Pep storage rings, *Superhilac, Construction, Fusion reactions, Heavy ion reactions, Operation, Research programs.
Identifiers: ERDA/430100.

For abstract, see ERA citation 04:024349.

SAN-948-1 PC **A03**/MF **A01**
Physics International Co., San Leandro, CA.
Further Studies of Collective Ion Acceleration in Intense Pulsed Electron BEAMS. PIFR-557. Final Report, May 1976–May 1977.
B. Ecker, and S. Putnam. Jun 77, 29p
Contract EY-76-C-03-0948

Descriptors: *Collective accelerators, Beam optics, Deuterons, Electron beams, Gases, Ionization, Performance, Pressure dependence, Pressure gradients, Protons, Pulses.
Identifiers: ERDA/430100.

For abstract, see ERA citation 04:024351.

SAND-78-2049C PC **A02**/MF **A01**
Sandia Labs., Albuquerque, NM.
High Current Linear Ion Accelerators for Inertial Fusion.
S. Humphries, Jr. 1978, 8p CONF-780979-9
Contract EY-76-C-04-0789
Heavy ion fusion workshop, Chicago, IL, USA, 19 Sep 1978.

Descriptors: *Linear accelerators, Beam neutralization, Electrons, Feasibility studies, Inertial confinement, Magnetic fields.
Identifiers: ERDA/430200, ERDA/700208.

For abstract, see ERA citation 04:024358.

SLAC-PUB-2196 PC **A02**/MF **A01**
Stanford Linear Accelerator Center, CA.
Multi-Ampere Heavy Ion Injector for Linear Induction Accelerators Using Periodic Electrostatic Focusing.
W. B. Herrmannsfeldt. Oct 78, 14p CONF-780979-5
Contract EY-76-C-03-0515
Heavy ion fusion workshop, Chicago, IL, USA, 19 Sep 1978.

Descriptors: *Hilacs, Cesium ions, Drift tubes, Electrostatic lenses, Focusing, Ion beams, Ion sources, Scaling laws, Uranium ions.
Identifiers: ERDA/430200, ERDA/700208.

For abstract, see ERA citation 04:024359.

UTTAC-1 PC **A04**/MF **A01**
Tsukuba Univ., Ibaraki (Japan). Tandem Accelerator Center.
Annual Report of Tandem Accelerator Center, University of Tsukuba, for Fiscal 1975.
1976, 75p
U.S. Sales Only.

Descriptors: *Van de graaff accelerators, Accelerator facilities, Construction, Heavy ion reactions, Ion sources, Japanese organizations, Laboratory equipment, Polarized beams, Research programs, Vacuum systems.
Identifiers: ERDA/430303, Japan.

For abstract, see Atomindex citation 09:386532.

UTTAC-2 PC **A05**/MF **A01**
Tsukuba Univ., Sakura, Ibaraki (Japan). Tandem Accelerator Center.
Annual Report of Tandem Accelerator Center, University of Tsukuba, for Fiscal 1976.
1977, 80p
U.S. Sales Only.

Descriptors: *Van de graaff accelerators, Accelerator facilities, Decay, Heavy ion reactions, Ion sources, Japanese organizations, Laboratory equipment, Nuclear physics, Nuclear structure, Polarized beams, Research programs.
Identifiers: ERDA/430303, Japan.

For abstract, see Atomindex citation 09:386965.

20H. Particle Physics

ANL-HEP-CP-78-45 PC **A03**/MF **A01**
Argonne National Lab., IL.
Some Recent Results on Strong Interactions.
R. Diebold. 1978, 48p CONF-780876-1
Contract W-31-109-ENG-38
Meeting on frontier of physics, Singapore, Japan, 14 Aug 1978.

Descriptors: *Charm particles, *Cosmic radiation, *Hadron reactions, *Hadron-hadron interactions, Inclusive interactions, Multiple production, Reviews.
Identifiers: ERDA/645000, ERDA/640101.

For abstract, see ERA citation 04:024776.

ANL-HEP-CP-78-48 PC **A02**/MF **A01**
Argonne National Lab., IL.
Implications of Nucleon–Nucleon Spin-Polarization Measurements.
A. C. Irving, E. L. Berger, and C. Sorensen. 1978, 8p CONF-781095-5
Contract W-31-109-ENG-38
Symposium on high energy physics, Argonne, IL, USA, 26 Oct 1978.

Descriptors: *Proton-proton interactions, A1-1070 resonances, Boson-exchange models, Elastic scattering, Exchange interactions, Helicity, Isospin, Pomeranchuk particles, Regge poles, Scattering amplitudes.
Identifiers: ERDA/645207.

For abstract, see ERA citation 04:024802.

ANL-HEP-CP-78-49 PC **A02**/MF **A01**
Argonne National Lab., IL.
Polarization Measurements and a Narrow Epsilon (750).
J. T. Donohue, and Y. Leroyer. 1978, 4p CONF-781095-4
Contract W-31-109-ENG-38
Symposium on high energy physics, Argonne, IL, USA, 26 Oct 1978.

Descriptors: *Eta-700 resonances, *Pion minus-proton interactions, *Pion plus-proton interactions, *Pion-pion interactions, Delta-1236 resonances, Particle production, Particle widths, Pions minus, Pions plus, Polarization.
Identifiers: ERDA/645205.

For abstract, see ERA citation 04:024798.

ANL-HEP-CP-78-50 PC **A02**/MF **A01**
Argonne National Lab., IL.
High-P/sub T/ Theory in a Spin.
D. Sivers. 1978, 18p CONF-781095-3
Contract W-31-109-ENG-38
Symposium on high energy physics, Argonne, IL, USA, 26 Oct 1978.

Descriptors: *Electron-proton interactions, *Proton-proton interactions, *Quantum chromodynamics, *Transverse momentum, Asymmetry, Hadron-hadron interactions, Linear momentum, Particle production, Polarized beams, Polarized targets, Spin.
Identifiers: ERDA/645204, ERDA/645400.

For abstract, see ERA citation 04:024796.

ANL-HEP-CP-78-51 PC **A03**/MF **A01**
Argonne National Lab., IL.
Organizer's Report, Session A2 (August 24, 1978).
A. Yokosawa. 1978, 45p CONF-780826-26
Contract W-31-109-ENG-38
19. conference on high energy physics, Tokyo, Japan, 23 Aug 1978.

Descriptors: *Hadron-hadron interactions, Charge-exchange interactions, Meetings, Tev range, Transverse momentum.
Identifiers: ERDA/645103, ERDA/645104.

For abstract, see ERA citation 04:024784.

ANL-HEP-CP-78-52 PC **A03**/MF **A01**
Argonne National Lab., IL.
Diproton Resonances in the Mass Region 2100 to 2800 MeV.
Y. Akihiko. 1978, 34p CONF-780967-2
Contract W-31-109-ENG-38
Meeting on exotic resonances, Hiroshima, Japan, 1 Sep 1978.

Descriptors: *Dibaryon resonances, *Proton-proton interactions, Bag model, Correlations, Differential cross sections, Dispersion relations, Elastic scattering, Energy dependence, Legendre polynomials, Mass, Parity, Partial waves, Particle properties, Particle widths, Phase shift, Polarization, Quantum numbers, Resonance particles, Scattering amplitudes, Series expansion, Spin, Total cross sections.
Identifiers: ERDA/645103.

For abstract, see ERA citation 04:024785.

BNL-24931 PC **A02**/MF **A01**
Brookhaven National Lab., Upton, NY.
16.3 EV Neutron Capture in exp 107 Ag: Nuclear Structure of exp 108 Ag.
G. B. Orr, W. R. Kane, and G. J. Smith. 1978, 6p CONF-780926-19
Contract EY-76-C-02-0016
Symposium on neutron capture of gamma-ray spectroscopy, Upton, NY, USA, 18 Sep 1978.

Descriptors: *Silver 107 target, *Silver 108, Capture, Correlations, Crystal structure, Energy levels, Energy-level transitions, Ev range 10-100, Neutron reactions, Parity, Resonance, Spin.
Identifiers: ERDA/651725, ERDA/651723.

For abstract, see ERA citation 04:024845.

BNL-24968 PC **A02**/MF **A01**
Brookhaven National Lab., Upton, NY.
Long Range Absorption and Other Direct Reaction Components in the Optical Potential.
A. J. Blatz, N. K. Glendenning, S. K. Kauffmann, and K. Pruess. 1978, 15p CONF-780971-1
Contract EY-76-C-02-0016
Workshop on microscopic optical potentials, Hamburg, F.R. Germany, 25 Sep 1978.

Descriptors: *Samarium 154 target, *Calcium 40 target, *Oxygen 16 reactions, Absorption, Coulomb field, Coupled channel theory, Cross sections, Elastic scattering, Excitation, Ground states, Inelastic scattering, Mev range 10-100, Nuclear potential, Numerical solution, Optical models, Semiclassical approximation, Alpha reactions.
Identifiers: ERDA/651815, ERDA/651515.

For abstract, see ERA citation 04:024855.

BNL-25061 PC **A02**/MF **A01**
Brookhaven National Lab., Upton, NY.
Synchrotron Light and Its Uses.
J. P. Blewett. 1978, 6p CONF-781033-31
Contract EY-76-C-02-0016
IEEE nuclear science symposium, Washington, DC, USA, 18 Oct 1978.

Descriptors: *Charged particles, *Electrons, *Synchrotron radiation, Acceleration, Electrodynamics, Gases, Kinetics, Liquids, Physical properties, Reviews, Solids, Uses.
Identifiers: ERDA/645101.

For abstract, see ERA citation 04:024777.

BNL-25075 PC **A02**/MF **A01**
Brookhaven National Lab., Upton, NY.
Electron Pairs Production at the ISR.
A. M. Cnops, C. W. Fabjan, and M. Goldberg. 1978, 23p CONF-780826-24
Contract EY-76-C-02-0016
19. conference on high energy physics, Tokyo, Japan, 23 Aug 1978, Portions of document are illegible.

Descriptors: *Electron pairs, *Proton-proton interactions, *Psi resonances, *Upsilon resonances, Cross sections, Leptonic decay, Mass, Pair production, Particle production, Transverse momentum.

Identifiers: ERDA/645101, ERDA/645104.

For abstract, see ERA citation 04:024778.

BONN-HE-78-10 PC **A02**/MF **A01**
Bonn Univ. (Germany, F.R.). Physikalisches Inst.
Multileptons and the Structure of Weak Decays of Bottom Mesons.
G. C. Branco, and H. P. Nilles. Jun 78, 10p
U.S. Sales Only.

Descriptors: *Electron-positron interactions, *Quarks, *Upsilon resonances, Annihilation, Branching ratio, Configuration mixing, Flavor model, Particle properties, Semileptonic decay, Weak neutral currents, Weak particle decay.
Identifiers: ERDA/645202, West Germany.

For abstract, see Atomindex citation 09:413226.

BONN-HE-78-8 PC **A02**/MF **A01**
Bonn Univ. (Germany, F.R.). Physikalisches Inst.
Weak Interactions of the Bottom Quark.
G. C. Branco, and R. N. Mohapatra. Apr 78, 11p
U.S. Sales Only.

Descriptors: *Higgs model, *Intermediate vector bosons, *Quarks, Coupling, Flavor model, Unified gauge models, Upsilon resonances, Weak interactions.
Identifiers: ERDA/645203, ERDA/645400.

For abstract, see Atomindex citation 09:413227.

CONF-7810111-1 PC **A03**/MF **A01**
Argonne National Lab., IL.
Brueckner–Bethe Calculations of Nuclear Matter.
B. D. Day. 1978, 34p
Contract W-31-109-ENG-38
Recent progress in many-body theories, Trieste, Italy, 2 Oct 1978.

Descriptors: *Nuclear matter, Central potential, Nuclear forces, Numerical solution, Reid potential, Series expansion, Tensors.
Identifiers: ERDA/653002.

For abstract, see ERA citation 04:024871.

CONF-781174-3 PC **A02**/MF **A01**
Argonne National Lab., IL.
Fission Cross Section Ratio of exp 242 Pu Relative to exp 235 U from 0.4 to 10 MeV.
J. W. Meadows. 1978, 11p
Contract W-31-109-ENG-38
Conference on the nuclear data of higher plutonium and americium isotope for reactor applications, Upton, NY, USA, 20 Nov 1978.

Descriptors: *Plutonium 242 target, *Uranium 235 target, Alpha spectra, Cross sections, Energy dependence, Fast fission, Kev range 100-1000, Mev range 01-10, Neutron reactions.
Identifiers: ERDA/652026.

For abstract, see ERA citation 04:024865.

COO-0535-766 PC **A10**/MF **A01**
Colorado Univ., Boulder. Nuclear Physics Lab.
Technical Progress Report.
1 Nov 78, 205p
Contract EY-76-C-02-0535

Descriptors: *Cyclotrons, *Nuclear physics, Leading abstract, Operation, Research programs.
Identifiers: ERDA/651000, ERDA/430100.

For abstract, see ERA citation 04:024817.

COO-1195-415 PC **A06**/MF **A01**
Illinois Univ. at Urbana-Champaign Graduate Coll.
Backward Resonance Production of pi Minus Plus Proton Goes to Neutron pi Plus pi Minus at 8 GeV/C.
R. G. Wagner. 1974, 104p
Contract EY-76-C-02-1195
Thesis.

Descriptors: *Delta-1236 resonances, *F-1260 resonances, *Pion minus-proton interactions, *Rho-765 resonances, Angular distribution, Differential cross sections, Hadronic particle decay, Neutrons, Pions minus, Pions plus, Production mechanisms.
Identifiers: ERDA/645104.

For abstract, see ERA citation 04:024789.

COO-1545-245 PC **A06**/MF **A01**
Ohio State Univ., Columbus. Dept. of Physics.
Gauge Field Theories. Part Three. Renormalization.
P. H. Frampon. 1978, 106p
Contract EY-76-C-02-1545

Descriptors: *Scalar fields, *Yang-mills theory, Gauge invariance, Renormalization, Su-2 groups, Symmetry, Symmetry breaking, U-1 groups.
Identifiers: ERDA/645400, ERDA/645301.

For abstract, see ERA citation 04:024813.

COO-1764-337 PC **A02**/MF **A01**
Rochester Univ., NY.
Pion Dissociation in the Nuclear Coulomb Field.
D. Berg, C. Chandlee, and S. Cihangir. 1978, 12p CONF-780826-18
Contract EY-76-C-02-1764
19. conference on high energy physics, Tokyo, Japan, 23 Aug 1978.

Descriptors: *A2-1310 resonances, *Carbon, *Lead, *Pion minus reactions, *Rho-765 resonances, Charge-exchange reactions, Elastic scattering, Emission, Excitation, Limiting values, Particle widths, Photons, Photonuclear reactions, Pions minus, Radiative decay.
Identifiers: ERDA/645101, ERDA/645104, ERDA/651315, ERDA/651825.

For abstract, see ERA citation 04:024779.

COO-2171-182 PC **A02**/MF **A01**
Rochester Univ., NY.
Nuclear Structure Theory. Annual Technical Progress Report, October 1, 1977–September 30, 1978.
J. B. French, and D. S. Koltun. 1978, 12p UR-671
Contract EY-76-S-02-2171

Descriptors: *Nuclear reactions, *Nuclear structure, Capture, Deep inelastic scattering, Ergodic hypothesis, Heavy ion reactions, Mathematical operators, Matrices, Meson reactions, Multiple scattering, Pion reactions, Pion-nucleon interactions, Research programs, Scattering, Spectra, Statistics, Strength functions, Symmetry groups, Variations.
Identifiers: ERDA/653001, ERDA/653003.

For abstract, see ERA citation 04:024867.

COO-2171-184 MF **A01**
Rochester Univ., NY. Dept. of Physics and Astronomy.
Symmetries and Statistical Behavior in Fermion Systems.
J. B. French, and J. P. Draayer. 1978, 15p UR-673, CONF-780991-1
Contract EY-76-S-02-2171
Conference on group theory and applied mathematics, Ontario, Canada, Sep 1978, Portions of document are illegible.
Microfiche copies only.

Descriptors: *Nuclear structure, *Nuclei, Emission spectra, Energy levels, Excitation, Fermions, Statistics, Symmetry.
Identifiers: ERDA/653001.

For abstract, see ERA citation 04:024868.

COO-2184-46 PC **A03**/MF **A01**
Princeton Univ., NJ.
Nuclear Chemistry Project. Progress Report, January 1, 1978–December 31, 1978.
R. A. Naumann. 10 Oct 78, 37p
Contract EY-76-S-02-2184

Descriptors: *Alkali metal compounds, *Halides, *Muons minus, *Samarium 149, *Samarium 151 target, *Lead, *Lead 205, Absorption, Capture, Charged-particle transport, Coulomb field, Energy spectra, Flux density, Slowing-down, Angular distribution, Differential cross sections, Energy levels, Energy-level transitions, Gamma spectra, Parity, Pickup reactions, Proton reactions, Spin, Two-nucleon transfer reactions, Hyperfine structure, Magnetic dipole moments, Magnetic moments, Quadrupole moments, Spectral shift, Modifications, Spectrometers.
Identifiers: ERDA/651000.

For abstract, see ERA citation 04:024818.

COO-2186-34 PC **A03**/MF **A01**
State Univ. of New York at Albany.
Nuclear Spectroscopy and Nuclear Reaction Work with (A) The Super HILAC at Berkeley; the Heavy Ion Accelerator at Yale; and (B) The 4 MeV Dynamitron SUNY, Albany, New York. Technical Progress Report, December 1, 1975–August 31, 1977.
H. Bakhru. 1977, 40p
Contract EY-76-S-02-2186
Portions of document are illegible.

Descriptors: *Light nuclei, *Iridium 181, Corrections, Cross sections, Electronic structure, Fluorescence, Holes, Proton reactions, X-ray spectra, Electron capture decay, Energy levels, Gamma spectra, Osmium 181.
Identifiers: ERDA/651325, ERDA/651425.

For abstract, see ERA citation 04:024830.

COO-3064-015 PC **A03**/MF **A01**
Harvard Univ., Cambridge, MA. Dept. of Physics.
Hadron Production from Muon Scattering at 219 GeV.
B. A. Gordon, W. A. Loomis, and F. M. Pipkin. 1978, 44p CONF-780826-20
Contracts EY-76-C-02-3064, EY-76-C-02-1195
19. conference on high energy physics, Tokyo, Japan, 23 Aug 1978.

Descriptors: *D resonances, *Kaons, *Muon-proton interactions, *Phi-1019 resonances, *Pions, *Rho-765 resonances, Angular correlation, Deep inelastic scattering, Distribution, Gev range 100-1000, Hadrons, Limiting values, Linear momentum, Mass spectra, Muons, Particle production, Protons, Recoils, Scattering, Transverse momentum.
Identifiers: ERDA/645102, ERDA/645104.

For abstract, see ERA citation 04:020702.

COO-3065-210 PC **A03**/MF **A01**
Rochester Univ., NY. Dept. of Physics and Astronomy.
Hadron-Nucleus Inclusive Data from Fermilab.
T. Ferbel. 1978, 27p CONF-780826-23, UR-669
Contract EY-76-C-02-3065
19. conference on high energy physics, Tokyo, Japan, 23 Aug 1978.

Descriptors: *Hadron reactions, *Nucleon-nucleon interactions, *Pion-nucleon interactions, Inclusive interactions, Meetings, Particle production, Reviews.
Identifiers: ERDA/645103, ERDA/645104.

For abstract, see ERA citation 04:024786.

COO-3065-211 PC **A03**/MF **A01**
Rochester Univ., NY. Dept. of Physics and Astronomy.
Particle Physics Using Nuclear Targets.
T. Ferbel. 1978, 42p CONF-780876-2, UR-670
Contract EY-76-C-02-3065
Meeting on frontier of physics, Singapore, Japan, 14 Aug 1978.

Descriptors: *Baryons, *Hadron reactions, *Mesons, Coherent scattering, Decay, Inclusive interactions, Particle production.
Identifiers: ERDA/645207.

For abstract, see ERA citation 04:024804.

COO-3069-631 PC **A04**/MF **A01**
Massachusetts Inst. of Tech., Cambridge.
Pion-Nucleus Scattering in the Isobar Formalism.
E. J. Moniz. Jun 78, 65p
Contract EY-76-C-02-3069

Descriptors: *Isobar model, *Oxygen 16 target, Elastic scattering, Extended particle model, Inclusive interactions, Inelastic scattering, Lectures, Many-body problem, Nuclear potential, Nucleons,

Optical models, Particle-hole model, Pion reactions, Pions, S waves.
Identifiers: ERDA/651315.

For abstract, see ERA citation 04:020811.

COO-3130TA-343 PC **A02**/MF **A01**
Brown Univ., Providence, RI. Dept. of Physics.
Unitarity Restrictions on Semi-Classical Approximations to Certain Functional Integrals.
H. M. Fried. 1978, 5p CONF-7805151-1
Contract EY-76-C-02-3130
Conference on mathematical problems in feynman path integrals, Marseille, France, May 1978.

Descriptors: *Nucleon-nucleon interactions, *Scattering amplitudes, Correlations, Cross sections, Eikonal approximation, Energy dependence, Feynman path integral, Field theories, Impact parameter, Multiplicity, Nonlinear problems, Semiclassical approximation, Total cross sections, Unitarity, Vector mesons, Virtual particles.
Identifiers: ERDA/645207, ERDA/645500.

For abstract, see ERA citation 04:020780.

DESY-78/28 PC **A02**/MF **A01**
Deutsches Elektronen-Synchrotron, Hamburg (Germany, F.R.).
Spotting Glueballs in Collinear Gluon Jets.
P. Roy, and T. F. Walsh. Jun 78, 15p
U.S. Sales Only.

Descriptors: *Upsilon resonances, Gluon model, Hadronic particle decay, Hadrons, Jet model, Pions.
Identifiers: ERDA/645205, West Germany.

For abstract, see Atomindex citation 09:413311.

DOE/ER/70004-204 PC **A02**/MF **A01**
Science Research Council, Chilton (England). Rutherford Lab.
Pion Structure Function from Low-p/sub T/ Hadron Production.
R. C. Hwa, and R. G. Roberts. 1978, 17p RLO-2230/T4-204
Contract EY-76-S-06-2230-004

Descriptors: *Kaons plus, *Pion plus-proton interactions, *Pions, Distribution, Inclusive interactions, Meson resonances, Particle models, Particle production, Quark model, Quarks, Recombination, Structure functions, Transverse momentum.
Identifiers: ERDA/645104, Great Britain.

For abstract, see ERA citation 04:020728.

DOE/ER-70004-205 PC **A02**/MF **A01**
Science Research Council, Chilton (England). Rutherford Lab.
Nonfactorizability of Inclusive Distributions in Perturbative QCD.
R. C. Hwa, and J. Wosiek. 11 Aug 78, 9p RLO-2230/T4-205
Contract EY-76-S-06-2230-004

Descriptors: *Inclusive interactions, *Leptons, Corrections, Distribution, Factorization, Gluon model, Pair production, Quantum chromodynamics, Transverse momentum.
Identifiers: ERDA/645203, Great Britain.

For abstract, see ERA citation 04:020753.

DOE/ER/70004-208 PC **A02**/MF **A01**
Oregon Univ., Eugene. Inst. of Theoretical Science.
New Approach to Lepton Pair Production.
R. C. Hwa, and C. S. Lam. 1978, 13p RLO-2230/T4-208
Contract EY-76-S-06-2230-004

Descriptors: *Hadron-hadron interactions, *Leptons, *Parton model, *Quantum chromodynamics, Energy dependence, Gluon model, Many-body problem, Mass, Pair production, Particle rapidity, Perturbation theory, Thermodynamic model, Transverse momentum.
Identifiers: ERDA/645203, ERDA/645400, ERDA/645204.

For abstract, see ERA citation 04:020754.

DOE/ER/70004-210 PC **A02**/MF **A01**
Science Research Council, Chilton (England). Rutherford Lab.
Sum Rules and Moments for Lepton-Pair Production.
R. C. Hwa. Jan 78, 12p RLO-2230/T4-210
Contract EY-76-S-06-2230-004

Descriptors: *Leptons, *Quarks, Cross sections, Drell model, Pair production, Sum rules, Transverse momentum, Valence.
Identifiers: ERDA/645203.

For abstract, see ERA citation 04:020755.

DOE/ER/70004-217 PC **A02**/MF **A01**
Oregon Univ., Eugene. Inst. of Theoretical Science.
Proposal to Measure the D Meson Decay Constant F/sub D/.
N. G. Deshpande, and D. Iskandar. Aug 78, 10p RLO-2230-T4-217
Contract EY-76-S-06-2230-004

Descriptors: *D resonances, Branching ratio, Semileptonic decay.
Identifiers: ERDA/645104.

For abstract, see ERA citation 04:024790.

DOE/ER/70004-223 PC **A02**/MF **A01**
Oregon Univ., Eugene. Inst. of Theoretical Science.
Construction of the Functional Integral Representation for Fermion Green's Functions.
D. E. Soper. 1977, 13p RLO-2230/T4-223
Contract EY-76-S-06-2230-004

Descriptors: *Fermions, *Green function, *Quantum field theory, Functionals, Integrals.
Identifiers: ERDA/645400.

For abstract, see ERA citation 04:024814.

DOE/ER/70004-225 PC **A02**/MF **A01**
Oregon Univ., Eugene. Inst. of Theoretical Science.
Parity Violation and the Masslessness of the Neutrino.
P. D. Mannheim. Sep 78, 12p RLO-2250/T4-225
Contract EY-76-S-06-2230-004
Portions of document are illegible.

Descriptors: *Cabibbo angle, *Neutrinos, *Weak interactions, *Weinberg lepton model, Chiral symmetry, Configuration mixing, Flavor model, Gauge invariance, Leptons, Mass, P invariance, Quarks, Spinors, Strong interactions.
Identifiers: ERDA/645302.

For abstract, see ERA citation 04:024811.

FB-78-01 PC **A02**/MF **A01**
Bogazici Univ., Istanbul (Turkey). Dept. of Physics.
High Energy Pair Production in Arbitrary Configuration of Intense Electromagnetic Fields.
S. Ayasli, and A. Hacinliyan. 1978, 11p
U.S. Sales Only.

Descriptors: *Pair production, *Pulsars, Attenuation, Configuration, Electric fields, Electrodynamics, Electromagnetic fields, Lorentz transformations, Photons.
Identifiers: ERDA/645202, Turkey.

For abstract, see Atomindex citation 09:396234.

FB-78-02 PC **A02**/MF **A01**
Bogazici Univ., Istanbul (Turkey). Dept. of Physics.
Interaction of an External Instanton with a Spinor Field.
M. Hortacsu. 1978, 8p
U.S. Sales Only.

Descriptors: *Instantons, *Vacuum states, Coupling constants, Eigenvalues, Electromagnetic interactions, Field equations, Field theories, Lagrange equations, Magnetic fields, Spinors, Transition amplitudes.
Identifiers: ERDA/645400, Turkey.

For abstract, see Atomindex citation 09:396292.

FB-78-03 PC **A02**/MF **A01**
Bogazici Univ., Istanbul (Turkey). Dept. of Physics.
Renormalizability Properties and the Existence of Phase Transitions.
N. Ercan, and M. Hortacsu. 1978, 10p
U.S. Sales Only.

Descriptors: *Quantum field theory, Coupling constants, Electromagnetic interactions, Lagrange equations, Mathematical models, Phase transformations, Potential energy, Renormalization.
Identifiers: ERDA/645400, Turkey.

For abstract, see Atomindex citation 09:396271.

FB-78-04 PC **A02**/MF **A01**
Bogazici Univ., Istanbul (Turkey). Dept. of Physics.
New Thresholds from Old Total Cross Sections.
A. Hacinliyan. 1978, 22p
U.S. Sales Only.

Descriptors: *Kaon-nucleon interactions, *Nucleon-nucleon interactions, *Pion-nucleon interactions, *Quarks, Hadrons, Mass, Matrices, Sum rules, Threshold energy, Total cross sections.
Identifiers: ERDA/645207, ERDA/645206, Turkey.

For abstract, see Atomindex citation 09:396288.

FERMILAB-Conf-78-23-THe PC **A02**/MF **A01**
Fermi National Accelerator Lab., Batavia, IL.
Transverse Lattice Theory of Quantum Chromodynamics.
W. A. Bardeen. Feb 78, 24p CONF-770775-1
Contract EY-76-C-02-3000
Cargese summer school, Cargese, France, Jul 1977.

Descriptors: *Quantum chromodynamics, Coupling, Gauge invariance, Limiting values, Linear momentum, Transverse momentum.
Identifiers: ERDA/645400, ERDA/645201.

For abstract, see ERA citation 04:024815.

FERMILAB-CONF-78/33-THY PC **A03**/MF **A01**
Fermi National Accelerator Lab., Batavia, IL.
Using Field Theory in Hadron Physics.
H. D. I. Abarbanel. Mar 78, 41p CONF-7706167-1
Contract EY-76-C-02-3000
Topical seminar on particles and fields, Tubingen, F.R. Germany, 20 Jun 1977.

Descriptors: *Quantum chromodynamics, Color model, Confinement, Hadrons, Infrared divergences, Instantons, Particle production, Renormalization, Ultraviolet divergences, Vacuum states.
Identifiers: ERDA/645400.

For abstract, see ERA citation 04:020785.

FERMILAB-CONF-78/64-THY PC **A03**/MF **A01**
Fermi National Accelerator Lab., Batavia, IL.
Weak Decays of Heavy Quarks.
M. K. Gaillard. Aug 78, 39p CONF-780769-2
Contract EY-76-C-02-3000
SLAC conference on weak interactions, Stanford, CA, USA, 10 Jul 1978.

Descriptors: *Quarks, Branching ratio, Charm particles, Coupling, Cp invariance, Decay, Flavor model, Hyperons, Kaons, Leptonic decay, Lifetime, Omega minus, Selection rules, Semileptonic decay, Topology.
Identifiers: ERDA/645201.

For abstract, see ERA citation 04:024793.

FERMILAB-CONF-78/65/THY PC **A03**/MF **A01**
Fermi National Accelerator Lab., Batavia, IL.
Implications of the T States.
J. L. Rosner. Aug 78, 27p CONF-780826-22
Contract EY-76-C-02-1764
19. conference on high energy physics, Tokyo, Japan, 23 Aug 1978.

Descriptors: *Higgs bosons, *Leptons, *Quarks, *Upsilon resonances, Bound state, Electric charges, Leptonic decay, Mass spectra, Particle properties, Reviews.

Identifiers: ERDA/645205.

For abstract, see ERA citation 04:024799.

IFVE-OTF-75-123 PC **A02**/MF **A01**
Gosudarstvennyi Komitet po Ispol'zovaniyu Atomnoi Energii SSSR, Serpukhov. Inst. Fiziki Vysokikh Energii.
Factorization of the Classical and Quantum S Matricex and Conservation Laws.
P. P. Kulish. 1975, 13p
In Russian.
U.S. Sales Only.

Descriptors: *S matrix, Conservation laws, Equations of motion, Factorization, Integrals, Many-body problem, Solitons, Two-body problem.
Identifiers: ERDA/645500, USSR.

For abstract, see Atomindex citation 09:412381.

IFVE-OTF-77-14O PC **A03**/MF **A01**
Gosudarstvennyi Komitet po Ispol'zovaniyu Atomnoi Energii SSSR, Serpukhov. Inst. Fiziki Vysokikh Energii.
Physical Equivalence of Three Forms of Relativistic Dynamics and Addition of Interactions in the Front and Instant Forms.
S. N. Sokolov, and A. N. Shatny. 1977, 29p
U.S. Sales Only.

Descriptors: *Hamiltonians, Axiomatic field theory, Eigenfunctions, S matrix, Three-body problem.
Identifiers: ERDA/645500, USSR.

For abstract, see Atomindex citation 09:412442.

IFVE-OTF-77-146 PC **A02**/MF **A01**
Gosudarstvennyi Komitet po Ispol'zovaniyu Atomnoi Energii SSSR, Serpukhov. Inst. Fiziki Vysokikh Energii.
Some Solutions of Yang-Mills Field Self-Duality Equations, Connected with Atiyah-Ward's Ansatz.
A. N. Leznov, M. V. Saveliev, and I. A. Fedoseev. 1977, 15p
U.S. Sales Only.

Descriptors: *Yang-mills theory, Duality, Euclidean space, Field equations, Four-dimensional calculations, Klein-gordon equation, Maxwell equations.
Identifiers: ERDA/645400, USSR.

For abstract, see Atomindex citation 09:412390.

IFVE-OTF-77-49 PC **A02**/MF **A01**
Gosudarstvennyi Komitet po Ispol'zovaniyu Atomnoi Energii SSSR, Serpukhov. Inst. Fiziki Vysokikh Energii.
Inclusive Electroproduction of Hadrons in Virtual Photon Fragmentation Range.
A. V. Kiselev, V. A. Petrov, and A. Yu. Taranov. 1977, 14p
In Russian.
U.S. Sales Only.

Descriptors: *Hadrons, *Inclusive interactions, Asymptotic solutions, Dyson representation, Electroproduction, Photons, Scale invariance, Spectral functions, Structure functions.
Identifiers: ERDA/645202, USSR.

For abstract, see Atomindex citation 09:413279.

IFVE-OTF-78-33 PC **A02**/MF **A01**
Gosudarstvennyi Komitet po Ispol'zovaniyu Atomnoi Energii SSSR, Serpukhov. Inst. Fiziki Vysokikh Energii.
Heavy Quark Fragmentation into Mesons and Baryons.
V. G. Kartvelishvili, and A. K. Likhoded. 1978, 8p
U.S. Sales Only.

Descriptors: *Baryons, *Electron-positron interactions, *Hadrons, *Mesons, *Quarks, Hadronic particle decay, Inclusive interactions, Limiting fragmentation, Mass, Mass spectra, Symmetry breaking.
Identifiers: ERDA/645204, ERDA/645202, USSR.

For abstract, see Atomindex citation 09:413275.

IS-T-825 PC **A21**/MF **A01**
Ames Lab., IA.
Hydrodynamic Model Wavefunctions in Intrinsic Coordinates and Their Application to the Structure of Even-Even Nuclei.
F. J. Margetan. Jan 79, 494p
Contract W-7405-ENG-82

Descriptors: *Erbium 166, *Hydrodynamic model, *Osmium 186, *Osmium 188, *Osmium 190, *Osmium 192, *Palladium 106, *Tellurium 122, *Tungsten 182, Collective model, Coordinates, Deformed nuclei, E2-transitions, Eigenfunctions, Energy, Energy levels, Even-even nuclei, Gamma spectra, Hamiltonians, Potential energy, Quasipotential equation, Series expansion, Spherical model, Vibrational states, Wave functions.
Identifiers: ERDA/653001, ERDA/651723, ERDA/651823, ERDA/651923.

For abstract, see ERA citation 04:024869.

IS-T-841 PC **A07**/MF **A01**
Ames Lab., IA.
Beta Decays of exp 126 Cd and exp 126 IN to Levels in exp 126 IN and exp 126 SN.
M. L. Gartner. Jan 79, 128p
Contract W-7405-ENG-82
Thesis.

Descriptors: *Cadmium 126, *Indium 126, *Tin 126, Beta-minus decay, Coincidence methods, Energy levels, Ft value, Gamma spectra, Half-life, High spin states, Isomeric nuclei, Lifetime, Parity, Selection rules, Spin.
Identifiers: ERDA/651722, ERDA/651723.

For abstract, see ERA citation 04:024841.

ITEF-124(1977) PC **A02**/MF **A01**
Gosudarstvennyi Komitet po Ispol'zovaniyu Atomnoi Energii SSSR, Moscow. Inst. Teoreticheskoi i Eksperimental'noi Fiziki.
Second Class Current in Weak Interactions.
G. A. Lobov, and V. V. Ugrozov. 1977, 16p
In Russian.
U.S. Sales Only.

Descriptors: *Omega-784 resonances, *Quarks, *Second-class currents, Decay, Electrons, Field theories, Form factors, Meson resonances, Neutrinos, Pions, Semileptonic decay, V-a theory, Weak interactions.
Identifiers: ERDA/645203, USSR.

For abstract, see Atomindex citation 09:413290.

ITEP-148 PC **A02**/MF **A01**
Gosudarstvennyi Komitet po Ispol'zovaniyu Atomnoi Energii SSSR, Moscow. Inst. Teoreticheskoi i Eksperimental'noi Fiziki.
Exact S-Matrix of Quantum Sine-Gordon Solitons.
A. B. Zamolodchikov. 1976, 3p
U.S. Sales Only.

Descriptors: *Sine-gordon equation, *Solitons, Antiparticles, Bound state, Matrix elements, S matrix, Scattering, Thirring model, Two-body problem, Unitarity.
Identifiers: ERDA/645400, ERDA/645500, USSR.

For abstract, see Atomindex citation 09:412476.

ITEP-155 PC **A02**/MF **A01**
Gosudarstvennyi Komitet po Ispol'zovaniyu Atomnoi Energii SSSR, Moscow. Inst. Teoreticheskoi i Eksperimental'noi Fiziki.
Three-Dimensional Periodic Solutions of Scalar Higgs Equation.
N. A. Voronov, and I. Ju. Kobsarev. 1976, 7p
U.S. Sales Only.

Descriptors: *Higgs model, *Scalar fields, Axial symmetry, Boundary conditions, Field equations, Series expansion, Symmetry breaking, Three-dimensional calculations.
Identifiers: ERDA/645400, USSR.

For abstract, see Atomindex citation 09:412468.

ITEP-27 PC **A02**/MF **A01**
Gosudarstvennyi Komitet po Ispol'zovaniyu Atomnoi Energii SSSR, Moscow. Inst. Teoreticheskoi i Eksperimental'noi Fiziki.
Summation of Series of Quasiclassical Perturbation Theory and Speculations About the Structure of Exact Solutions.
A. V. Turbiner. 1977, 9p
U.S. Sales Only.

Descriptors: *Harmonic oscillators, *Low equation, Asymptotic solutions, Ground states, O groups, Perturbation theory, Second quantization.
Identifiers: ERDA/645400, ERDA/645301, USSR.

For abstract, see Atomindex citation 09:412453.

ITEP-45 PC **A02**/MF **A01**
Gosudarstvennyi Komitet po Ispol'zovaniyu Atomnoi Energii SSSR, Moscow. Inst. Teoreticheskoi i Eksperimental'noi Fiziki.
Quantum Sine-Gordon Model. The Soliton Formfactors.
A. B. Zamolodchikov. 1977, 11p
U.S. Sales Only.

Descriptors: *Sine-gordon equation, Form factors, Matrix elements, S matrix, Solitons.
Identifiers: ERDA/645400, USSR.

For abstract, see Atomindex citation 09:412477.

ITEP-47 PC **A02**/MF **A01**
Gosudarstvennyi Komitet po Ispol'zovaniyu Atomnoi Energii SSSR, Moscow. Inst. Teoreticheskoi i Eksperimental'noi Fiziki.
Neutral Leptonic Currents and the Problem of mu -E Universality.
E. P. Shabalin. 1977, 12p
U.S. Sales Only.

Descriptors: *Antineutrino-electron interactions, *Electron-muon universality, *Lagrangian function, Electron antineutrinos, Gauge invariance, Muon antineutrinos, Neutral-current interactions, Neutrino-electron interactions, Renormalization, Vector fields.
Identifiers: ERDA/645203, ERDA/645400, USSR.

For abstract, see Atomindex citation 09:412436.

ITEP-66 PC **A03**/MF **A01**
Gosudarstvennyi Komitet po Ispol'zovaniyu Atomnoi Energii SSSR, Moscow. Inst. Teoreticheskoi i Eksperimental'noi Fiziki.
Lie Superalgebras.
F. A. Berezin. 1977, 28p
U.S. Sales Only.

Descriptors: *Laplacian, Casimir operators, Irreducible representations, Lie groups, Polynomials.
Identifiers: ERDA/645301, USSR.

For abstract, see Atomindex citation 09:412304.

ITEP-75 PC **A03**/MF **A01**
Gosudarstvennyi Komitet po Ispol'zovaniyu Atomnoi Energii SSSR, Moscow. Inst. Teoreticheskoi i Eksperimental'noi Fiziki.
Radial Parts of the Laplace Operators on the Lie Supergroups U(p, Q) and C (M, n).
F. A. Berezin. 1977, 50p
U.S. Sales Only.

Descriptors: *Laplacian, Casimir operators, Eigenvalues, Eigenvectors, Invariance principles, Irreducible representations, Lie groups, Matrix elements, Polynomials.
Identifiers: ERDA/645301, USSR.

For abstract, see Atomindex citation 09:412306.

ITEP-76 PC **A03**/MF **A01**
Gosudarstvennyi Komitet po Ispol'zovaniyu Atomnoi Energii SSSR, Moscow. Inst. Teoreticheskoi i Eksperimental'noi Fiziki.
Construction of Representations of Lie Supergroups U(p,Q) and C(M,N).
F. A. Berezin. 1977, 47p
U.S. Sales Only.

Descriptors: *Lie groups, Analytic functions, Irreducible representations, Matrix elements.
Identifiers: ERDA/645301, USSR.

For abstract, see Atomindex citation 09:412303.

ITEP-77 PC **A04**/MF **A01**
Gosudarstvennyi Komitet po Ispol'zovaniyu Atomnoi Energii SSSR, Moscow. Inst. Teoreticheskoi i Eksperimental'noi Fiziki.
Laplace-Cazimir Operators. General Theory.
F. A. Berezin. 1977, 51p
U.S. Sales Only.

Descriptors: *Casimir operators, Group theory, Invariance principles, Irreducible representations, Lie groups.
Identifiers: ERDA/645302, USSR.

For abstract, see Atomindex citation 09:412307.

ITEP-78 PC **A04**/MF **A01**
Gosudarstvennyi Komitet po Ispol'zovaniyu Atomnoi Energii SSSR, Moscow. Inst. Teoreticheskoi i Eksperimental'noi Fiziki.
Lie Supergroups.
F. A. Berezin. 1977, 52p
U.S. Sales Only.

Descriptors: *Lie groups, Algebra, Group theory, Matrix elements, Smooth manifolds.
Identifiers: ERDA/645301, USSR.

For abstract, see Atomindex citation 09:412305.

JINR-E-2-10129 PC **A02**/MF **A01**
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Computing Techniques and Automation.
Oscillating Particle-Like Solutions of Nonlinear Klein-Gordon Equation.
I. L. Bogolubsky. 1976, 10p
U.S. Sales Only.

Descriptors: *Extended particle model, Axial symmetry, Fourier analysis, Klein-gordon equation, Nonlinear problems, Numerical solution, Scalar fields.
Identifiers: ERDA/645201, USSR.

For abstract, see Atomindex citation 09:412309.

JINR-E-2-10582 PC **A02**/MF **A01**
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
Confinement Potential Produced by Indefinite Metric Multipole Fields of Infinite Order.
K. L. Nagy. 1977, 7p
U.S. Sales Only.

Descriptors: *Multipoles, Bound state, Charmonium, Confinement, Coulomb field, Lagrangian field theory, Metrics, Nonlocal potential.
Identifiers: ERDA/645400, ERDA/645202, Hungary.

For abstract, see Atomindex citation 09:412408.

JINR-E-2-10619 PC **A03**/MF **A01**
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
Two- and Three-Point Functions for Conformal Superfields.
B. L. Aneva, S. G. Mikhov, and D. Ts. Stoyanov. 1977, 27p
U.S. Sales Only.

Descriptors: *Scalar fields, *Spinor fields, Conformal invariance, Differential equations, Functions, Lorentz invariance, Minkowski space, Vacuum states.
Identifiers: ERDA/645400, USSR.

For abstract, see Atomindex citation 09:412292.

JINR-E-2-10645 PC **A02**/MF **A01**
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
Comments on a One-Dimensional Supergravity Model.
E. S. Sokatchev. 1977, 8p
U.S. Sales Only.

Descriptors: *Supergravity, Conservation laws, Current algebra, Gravitation, One-dimensional calculations, Supersymmetry, Symmetry groups.
Identifiers: ERDA/645300, USSR.

For abstract, see Atomindex citation 09:412441.

JINR-E-2-10720 PC **A02**/MF **A01**
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
Universality of Coupling Constant Singularity in Quantum Field Theory.
B. D. Dorfel, D. I. Kazakov, and D. V. Shirkov. 1977, 12p
U.S. Sales Only.

Descriptors: *Quantum field theory, Coupling constants, Green function, Integrals, Saddle-point method, Singularity, Spectral functions.
Identifiers: ERDA/645400, East Germany.

For abstract, see Atomindex citation 09:412339.

JINR-E-2-10749 PC **A02**/MF **A01**
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
Phase Function Approach to the Quasipotential Equation in Terms of Rapidities.
I. V. Amirkhanov, G. V. Grusha, and R. M. Mir-Kasimov. 1977, 21p
U.S. Sales Only.

Descriptors: *Quasipotential equation, Boundary conditions, Matrix elements, Particle rapidity, S matrix, Scattering amplitudes, Two-body problem, Wave functions.
Identifiers: ERDA/645201, USSR.

For abstract, see Atomindex citation 09:412290.

JINR-E-2-10765 PC **A02**/MF **A01**
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
Relation Between Linear and Nonlinear Realizations of Supersymmetry.
E. A. Ivanov, and A. A. Kapustnikov. 1977, 9p
U.S. Sales Only.

Descriptors: *Supersymmetry, Nonlinear problems, Quantum field theory, Renormalization, Spinor fields, Symmetry breaking.
Identifiers: ERDA/645300, USSR.

For abstract, see Atomindex citation 09:412370.

JINR-E-2-10857 PC **A02**/MF **A01**
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Nuclear Problems.
Relativistic Factorized S Matrix in Two Dimensions Having O(N) Isotopic Symmetry.
A. B. Zamolodchikov, and Al. B. Zamolodchikov. 1977, 16p
U.S. Sales Only.

Descriptors: *S matrix, Chiral symmetry, Feynman diagram, Many-body problem, Matrix elements, O groups, Quantum field theory, Series expansion, Space-time, Two-dimensional calculations, Unitarity.
Identifiers: ERDA/645500, ERDA/645301, USSR.

For abstract, see Atomindex citation 09:412478.

JINR-E-2-11029 PC **A02**/MF **A01**
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
Decay Modes of Y(9.4), Y'(10) and Their Pseudoscalar Partners.
R. A. Bertlmann. 1977, 15p
U.S. Sales Only.

Descriptors: *Pseudoscalar mesons, *Upsilon resonances, Feynman diagram, Hadronic particle decay, Leptonic decay, Mass, Particle widths, Wave functions.
Identifiers: ERDA/645102, ERDA/645104, Austria.

For abstract, see Atomindex citation 09:413222.

JINR-E-2-11064 PC **A02**/MF **A01**
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
Equation of Motion of Point Scalar Field Source in General Relativity.
S. V. Il'yn, and E. A. Tagirov. 1977, 17p
U.S. Sales Only.

Descriptors: *General relativity theory, Conformal invariance, Dirac equation, Equations of motion, Point charge, Ricci tensor, Riemann space, Scalar fields, Space-time, Ultraviolet divergences.
Identifiers: ERDA/645400, ERDA/657003, USSR.

For abstract, see Atomindex citation 09:412367.

JINR-E-2-11136 PC **A02**/MF **A01**
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
Exceptional Gauge Theories in 3X3 Matrix Formalism.
V. Ogievetsky, and V. Tzeitlin. 1978, 16p
U.S. Sales Only.

Descriptors: *Quantum field theory, Gauge invariance, Hermitian matrix, Lagrangian function, Lie groups.
Identifiers: ERDA/645400, USSR.

For abstract, see Atomindex citation 09:412413.

JINR-E-2-11274 PC **A02**/MF **A01**
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
Superconformal Invariant Quantum Field Theory in Two-Dimensional Space-Time.
R. P. Zaikov. 1978, 10p
U.S. Sales Only.

Descriptors: *Conformal groups, *Quantum field theory, *String models, Conformal invariance, Lagrangian function, Scalar fields, Space-time, Spin, Spinor fields, Supermultiplets, Tensors, Two-dimensional calculations.
Identifiers: ERDA/645400, USSR.

For abstract, see Atomindex citation 09:412474.

JINR-E-2-11485 PC **A02**/MF **A01**
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Nuclear Problems.
Structure on Non-Local Conservation Laws in the Two-Dimensional Non-Linear sigma-Model.
Al. B. Zamolodchikov. 1978, 12p
U.S. Sales Only.

Descriptors: *Charge conservation, *Charged particles, *Sigma model, *Sine-gordon equation, Analytical solution, Conservation laws, Electrodynamics, Factorization, Matrix elements, Nonlinear problems, Quantum field theory, S matrix, Scattering amplitudes, Solitons, Two-body problem.
Identifiers: ERDA/645202, USSR.

For abstract, see Atomindex citation 09:412479.

JINR-E-4-10412 PC **A02**/MF **A01**
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
New Method for Solving the Two-Center Problem with Relativistic Potentials.
F. A. Gareev, M. Ch. Gizzatkulov, and J. Revai. 1977, 16p
U.S. Sales Only.

Descriptors: *Oxygen 16, *Potential scattering, *Two-body problem, Bound state, Eigenfunctions, Eigenstates, Eigenvalues, Hamiltonians, Harmonic oscillators, Neutrons, Schroedinger equation, Single-particle model, Symmetry, Wave functions, Woods-saxon potential.
Identifiers: ERDA/645500, ERDA/651313, USSR.

For abstract, see Atomindex citation 09:412346.

JINR-E-4-11477 PC **A02**/MF **A01**
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
Hard Pions and Axial Meson Exchange Currents in Nuclei.
E. Ivanov, and E. Truhlik. 1978, 24p
U.S. Sales Only.

Descriptors: *A1-1070 resonances, *Pions, *Rho-765 resonances, Axial-vector currents, Exchange interactions, Meson resonances, Mesons, Nuclei, Pcac theory, Quantum operators.
Identifiers: ERDA/645205, ERDA/653001, USSR.

For abstract, see Atomindex citation 09:413263.

JINR-R-14-10925 PC **A02**/MF **A01**
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Neutron Physics.
Direction of the Vavilov-Cherenkov Radiation.
A. P. Kobzev. 1977, 12p

In Russian.
U.S. Sales Only.

Descriptors: *Cherenkov radiation, *Mica, Angular distribution, Electrons, Energy dependence, Kev range 100-1000, Physical radiation effects, Refraction, Targets, Thickness, Transition radiation, Visible radiation.
Identifiers: ERDA/645101, ERDA/360603, USSR.

For abstract, see Atomindex citation 09:412376.

JINR-R-2-10362 PC **A02**/MF **A01**
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Computing Techniques and Automation.
Stability of "Charged" Solitons within the Klein-Gordon Equation with Saturated Nonlinearity.
V. G. Makhan'kov. 1977, 11p
In Russian.
U.S. Sales Only.

Descriptors: *Klein-gordon equation, *Scalar fields, Nonlinear problems, Phi4-field theory, Solitons, Stability, U-1 groups.
Identifiers: ERDA/645400, USSR.

For abstract, see Atomindex citation 09:412394.

JINR-R-2-10729 PC **A02**/MF **A01**
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
Invariant Renormalization Method for Nonlinear Realizations of Dynamical Symmetries.
D. I. Kazakov, V. N. Pervushin, and S. V. Pushkin. 1977, 22p
In Russian.
U.S. Sales Only.

Descriptors: *Lagrangian field theory, Algorithms, Invariance principles, Lie groups, Nonlinear problems, Renormalization, Symmetry breaking, Ultraviolet divergences.
Identifiers: ERDA/645301, ERDA/645400, USSR.

For abstract, see Atomindex citation 09:412374.

JINR-R-2-11483 PC **A02**/MF **A01**
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
Deep Inelastic E(Mu)N-Scattering Experiments and Different Forms of Scale Breaking.
D. B. Stamenov. 1978, 10p
In Russian.
U.S. Sales Only.

Descriptors: *Electron-nucleon interactions, *Muon-nucleon interactions, Accuracy, Canonical dimension, Comparative evaluations, Data, Deep inelastic scattering, Gauge invariance, Lepton-nucleon interactions, Quantum chromodynamics, Scale invariance, Structure functions.
Identifiers: ERDA/645202, ERDA/645203, USSR.

For abstract, see Atomindex citation 09:413321.

LA-UR-78-2395 PC **A02**/MF **A01**
Los Alamos Scientific Lab., NM.
Application of the Boson Polynomials of U(N) to Physical Problems.
J. D. Louck. Sep 78, 13p CONF-780970-1
Contract W-7405-ENG-36
Colloquium on group theoretical methods in physics, Austin, TX, USA, 11 Sep 1978.

Descriptors: *Chemistry, *Physics, *U groups, Bosons, Irreducible representations, Mathematical operators, Polynomials, Reviews.
Identifiers: ERDA/645301.

For abstract, see ERA citation 04:024807.

LA-UR-78-2432 PC **A02**/MF **A01**
Los Alamos Scientific Lab., NM.
Complementarity Between Neutron Capture and Heavy-Ion Reactions in Nuclear Structure Studies.
O. W. B. Schult. 1978, 19p CONF-780926-21
Contract W-7405-ENG-36
Symposium on neutron capture of gamma-ray spectroscopy, Upton, NY, USA, 18 Sep 1978, Portions of document are illegible.

Descriptors: *Heavy ion reactions, *Neutron reactions, *Nuclear cores, *Nuclear structure, *Nuclei, *Nucleons, Capture, Coupling, De-excitation, Energy levels, Energy-level transitions, Rotational states.
Identifiers: ERDA/653001, ERDA/653003.

For abstract, see ERA citation 04:024870.

LA-UR-78-2631 PC **A03**/MF **A01**
Los Alamos Scientific Lab., NM.
Search for mu exp + implies E exp + gamma.
M. D. Cooper. 1978, 28p CONF-780769-1
Contract W-7405-ENG-36
SLAC conference on weak interactions, Stanford, CA, USA, 10 Jul 1978.

Descriptors: *Muons plus, Branching ratio, Limiting values, Radiative decay.
Identifiers: ERDA/645101.

For abstract, see ERA citation 04:024780.

LA-UR-78-2876 PC **A02**/MF **A01**
Los Alamos Scientific Lab., NM.
Search for Parity Violation in Polarized Proton Scattering at 6 GeV/C.
D. E. Nagle, J. D. Bowman, and C. M. Hoffman. 1978, 5p CONF-781095-1
Contracts W-7405-ENG-36, EY-76-S-02-2
Symposium on high energy physics, Argonne, IL, USA, 26 Oct 1978.

Descriptors: *Proton-nucleon interactions, Asymmetry, Gev range 01-10, Linear momentum, P invariance.
Identifiers: ERDA/645103.

For abstract, see ERA citation 04:020720.

LA-7453-T PC **A09**/MF **A01**
Los Alamos Scientific Lab., NM.
Quasielastic Pion Scattering Near the (3,3) Resonance.
P. Varghese. Dec 78, 197p
Contract W-7405-ENG-36
Thesis.

Descriptors: *Aluminium 27 target, *Lead 208 target, *Pion minus reactions, *Pion plus reactions, Atomic number, Background radiation, Charge-exchange reactions, Coincidence methods, Cross sections, Delta-1236 resonances, Differential cross sections, Energy spectra, Final-state interactions, Knock-out reactions, Mev range 100-1000, Nucleons, Pions, Protons, Quasi-elastic scattering, Recoils, Semiclassical approximation.
Identifiers: ERDA/651425, ERDA/651925.

For abstract, see ERA citation 04:024834.

LA-7620-MS PC **A02**/MF **A01**
Los Alamos Scientific Lab., NM.
Fission Product gamma Spectra.
E. T. Jurney, P. J. Bendt, and T. R. England. Jan 79, 22p
Contract W-7405-ENG-36

Descriptors: *Fission products, *Plutonium 239 target, *Uranium 233 target, *Uranium 235 target, After-heat, Cross sections, Gamma radiation, Gamma spectra, Multiplicity, Neutron reactions, Q-value, Thermal fission, Thermal neutrons.
Identifiers: ERDA/652026.

For abstract, see ERA citation 04:020851.

LBL-7793 PC **A02**/MF **A01**
California Univ., Berkeley. Lawrence Berkeley Lab.
Correlations and Total Muon Capture Rates.
A. Mekjian. Aug 78, 24p CONF-780860-1
Contract W-7405-ENG-48
Conference on medium-energy physics, Banff, Canada, 21 Aug 1978.

Descriptors: *Muon reactions, Capture, Correlations, Electric charges, Hartree-fock method, Heavy nuclei, Isospin, Isovectors, Light nuclei, Mass, Photonuclear reactions, Primakoff effect, Quantum operators, S waves, Shell models, Sum rules, Wave functions.
Identifiers: ERDA/653003.

For abstract, see ERA citation 04:020860.

LBL-8305 PC **A09**/MF **A01**
California Univ., Berkeley. Lawrence Berkeley Lab.
Measurement of Inclusive Production of Neutral Pions at High Transverse Momentum.
A. Ogawa. Oct 78, 189p
Contract W-7405-ENG-48

Descriptors: *Kaon-proton interactions, *Pion-proton interactions, *Pions neutral, *Proton-antiproton interactions, *Proton-proton interactions, Gev range 100-1000, Inclusive interactions, Particle production, Parton model, Quark model, Scale invariance, Transverse momentum.
Identifiers: ERDA/645104, ERDA/645103.

For abstract, see ERA citation 04:024791.

LBL-90 PC **E08**/MF **A01**
California Univ., Berkeley. Lawrence Berkeley Lab.
Indexed Compilation of Experimental High Energy Physics Literature.
C. P. Horne, G. P. Yost, and A. Rittenberg. Sep 78, 450p
Contract W-7405-ENG-48

Descriptors: *High energy physics, Beams, Data compilation, Final-state interactions, Indexes, Linear momentum, Particle interactions, Research programs, Targets.
Identifiers: ERDA/645100.

For abstract, see ERA citation 04:020691.

ORO-2504-273 PC **A03**/MF **A01**
Maryland Univ., College Park. Dept. of Physics and Astronomy.
High Energy Accelerator and Colliding Beam User Group. Progress Report, February 1, 1977–January 31, 1978.
G. A. Snow. 1978, 30p
Contract EY-76-C-05-2504

Descriptors: *High energy physics, Electron-positron interactions, Muons, Research programs.
Identifiers: ERDA/645100.

For abstract, see ERA citation 04:020692.

ORO-3992-355 PC **A02**/MF **A01**
Notre Dame Univ., IN. Dept. of Physics.
Multiquark Mesons.
S. K. Bose, and E. C. G. Sudarshan. Nov 78, 6p
Contract EY-76-S-05-3992

Descriptors: *Baryons, *Meson resonances, *Mesons, *Quark model, Coupling.
Identifiers: ERDA/645205, ERDA/645206.

For abstract, see ERA citation 04:024800.

RLO-1388-379 PC **A02**/MF **A01**
Washington Univ., Seattle. Dept. of Physics.
Nuclear Parity Mixing: An Experimental Review.
E. G. Adelberger. 1977, 13p CONF-7710107-6
Contract EY-76-C-06-1388
Conference on parity nonconservation, weak neutral currents and gauge theories, Batavia, IL, USA, 20 Oct 1977.

Descriptors: *Fluorine 19, *Nuclear structure, *P invariance, Energy-level transitions, Isospin, Mixing ratio, Multipolarity, Nucleon-nucleon potential, Reviews, Space-time, Weak neutral currents.
Identifiers: ERDA/653001, ERDA/651323.

For abstract, see ERA citation 04:020856.

RLO-1388-745 PC **A02**/MF **A01**
Washington Univ., Seattle.
Life and Times of Large p/sub T/ Physics: Diagnosis and Prognosis.
S. D. Ellis. Dec 77, 17p CONF-7710182-1
Contract EY-76-C-06-1388
American physical society meeting, Argonne, IL, USA, Oct 1977.

Descriptors: *Hadron-hadron interactions, *Particle models, Reviews, Transverse momentum.
Identifiers: ERDA/645204.

For abstract, see ERA citation 04:024797.

SLAC-PUB-2221(ADD) PC **A02**/MF **A01**
Weizmann Inst. of Science, Rehovoth (Israel).

Summary Talk.
H. Harari. Oct 78, 17p CONF-7809108-2
Contract EY-76-C-03-0515
Kyoto summer institute for particle physics, Kyoto, Japan, 1 Sep 1978.

Descriptors: *Electromagnetic interactions, *High energy physics, *Weak interactions, Hadron-hadron interactions, Quantum chromodynamics, Reviews, Su-2 groups, Supergravity, U-1 groups, Unified gauge models.
Identifiers: ERDA/645301, ERDA/657003, Israel.

For abstract, see ERA citation 04:024809.

SLAC-PUB-2226 PC **A03**/MF **A01**
Stanford Linear Accelerator Center, CA.
Phenomenology of Heavy Leptons and Heavy Quarks.
F. J. Gilman. Nov 78, 27p CONF-7809108-1
Contract EY-76-C-03-0515
Kyoto summer institute for particle physics, Kyoto, Japan, 1 Sep 1978.

Descriptors: *Heavy leptons, *Quarks, *Tau particles, Electromagnetic interactions, Hadronic particle decay, Leptonic decay, Mass spectra, Resonance particles, Reviews, Semileptonic decay, Su-2 groups, U-1 groups, Weak interactions.
Identifiers: ERDA/645301.

For abstract, see ERA citation 04:024810.

TID-29048 PC **A08**/MF **A01**
Fermi National Accelerator Lab., Batavia, IL.
Summary of Research Activities in the Meson Lab (1972--1977).
A. L. Read. Jun 77, 152p
Contract EY-76-C-02-3000

Descriptors: *Hadron-hadron interactions, *High energy physics, Research programs.
Identifiers: ERDA/645103, ERDA/645104.

For abstract, see ERA citation 04:024788.

UCRL-81596 PC **A02**/MF **A01**
California Univ., Livermore. Lawrence Livermore Lab.
Photofission and Electrofission.
B. L. Berman. 17 Aug 78, 12p CONF-780854-5
Contract W-7405-ENG-48
Conference on nuclear interactions, Canberra, Australia, 28 Aug 1978.

Descriptors: *Actinide nuclei, Angular distribution, Cross sections, Electrofission, Fission yield, Giant resonance, Photofission, Reviews.
Identifiers: ERDA/651926, ERDA/651923.

For abstract, see ERA citation 04:024860.

WIS-Ph-78/1 PC **A02**/MF **A01**
Weizmann Inst. of Science, Rehovoth (Israel). Dept. of Nuclear Physics.
Dynamical and Topological Considerations in Low and High Mass Diffractive Dissociation.
M. Bishari. 1978, 12p
U.S. Sales Only.

Descriptors: *Meson-meson interactions, Diffraction models, Elastic scattering, Lagrangian function, Mechanics, Multiperipheral model, Particle production, Pomeranchuk particles, Pomeranchuk poles, Regge poles, Strong interactions, Unitarity.
Identifiers: ERDA/645205, Israel.

For abstract, see Atomindex citation 09:413225.

WIS-Ph-78/6 PC **A02**/MF **A01**
Weizmann Inst. of Science, Rehovoth (Israel). Dept. of Nuclear Physics.
Unified Description of Mesons, Baryons, and Baryonium.
H. J. Lipkin. 1978, 14p
U.S. Sales Only.

Descriptors: *Baryonium, *Color model, *Mesons, Baryons, Mass, Orbital angular momentum, Quark model, Quarks, Spin, Strangeness.
Identifiers: ERDA/645204, Israel.

For abstract, see Atomindex citation 09:413289.

20I. Plasma Physics

AD-A064 846/9GA PC **A04**/MF **A01**
Michigan Univ., Ann Arbor. Dept. of Nuclear Engineering.
Laser Diagnostics in Metallic Plasmas.
Final rept. 1 Jun 74-31 Oct 78,
David R. Bach. Dec 78, 65p AFOSR-TR-79-0044
Grant AFOSR-74-2713

Descriptors: *Plasma diagnostics, *Laser beams, Radiation absorption, Ray tracing, Pinch effect, Plasma generators, Exploding wires, Lithium, Tungsten, Aluminum, Electron density, Photographic analysis, Interferometry, Holography, X ray spectra, Refractive index, Phase shift.
Identifiers: Etalons, Collisionless plasma, LPN-DRDA-012641.

The major objectives of the research described was the study of diagnostic techniques for metallic plasmas produced by exploded wire systems. Work accomplished included the development of a diamond die for the extrusion of lithium, ray tracing calculations to determine the deflection and absorption of rays passing through the plasma, and a transmission line calculation used for the design of etalons. Measurements made include X-ray temperature determinations by the line ratio method using scintillator detectors. Experiments were also carried out on a large area CdS detector for the measurement of infrared radiation. A two-wavelength holographic interferometer was designed, constructed, tested, and used for the measurement of density distribution in the exploded wire plasma and a Z-pinch. The useful measurements were made with the system at the ruby doubled frequency, as the transmission through the plasma was greater at this wavelength. The exploded wire system has been modified to accept solid wires of tungsten and aluminum which can be fed from outside the vacuum system and a new X-ray measuring system has been constructed. (Author)

AD-A065 149/7GA PC **A08**/MF **A01**
Colorado State Univ., Fort Collins. Dept. of Electrical Engineering.
Investigation of Nonideal Plasma Properties.
Final rept. 1 Nov 77-30 Nov 78,
H. E. Wilhelm, S. H. Hong, and S. H. Choi. Dec 78, 155p
Contract N00014-78-C-0117

Descriptors: *Plasmas(Physics), Alkali metals, Ion density, Electron gas, High density, Quantum theory, Wave functions, Momentum transfer, Thermodynamics, Schrodinger equation.
Identifiers: Degeneracy, Plasma acceleration.

The report contains theoretical work on pressure ionization, exchange energy, and degeneracy effects in high pressure plasmas. In the numerical examples, alkali plasmas are discussed. In addition tables of the Sommerfeld inegrals of degenerate electron gases are presented. With regard to the acceleration of plasmas in high density plasmas, a critical analysis of the propagation of wave packets is given within the frame of conventional (parabolic) quantum theory.

AD-A065 157/0GA PC **A02**/MF **A01**
California Univ., Berkeley. Electronics Research Lab.
Plasma Theory and Simulation.
Quarterly progress rept. no. 3, 1 Jul-30 Sep 78,
C. K. Birdsall, W. Fawley, Yu Jivan Chen, Douglas Harned, and Jae Koo Lee. 30 Sep 78, 23p
Contracts N00014-77-C-0578, EY-76-S-0034

Descriptors: *Plasmas(Physics), Plasma control, Magnetic fields, Cyclotron resonance, Magnetic mirrors, Drift, Fourier analysis, Simulation, Machine coding.
Identifiers: Plasma instability, Plasma simulation, Drift instability, Cyclotron instability.

Contents: Plasmas with Field Reversal; Simulations of Drift Cyclotron Instability; ES1 Code; Adaptation of ES1 to Use Post Processor ZED; 1 1/2d Particle-Fluid Hybrid Model for Lower Hybrid Drift Wave Instability; and RJET (Mini-User's Center) Development.

AD-A065 422/8GA PC **A02**/MF **A01**
California Univ., Los Angeles. School of Engineering and Applied Science.
A Class of Multidimensional Nonlinear Langmuir Waves,
P. K. C. Wang. 3 Oct 77, 8p AFOSR-TR-79-0149
Grant AFOSR-74-2662
Availability: Pub. in Jnl. of Mathematical Physics, v19 v6 p1286-1292 Jun 78.

Descriptors: *Plasma waves, Traveling waves, Nonlinear analysis, Ion density, Perturbations, Reprints.
Identifiers: *Nonlinear waves, Langmuir frequency.

No abstract available.

N79-19224/1GA PC **A03**/MF **A01**
Liverpool Univ. (England). Dept. of Electrical Engineering and Electronics.
High Current Arcs in an Orifice Flow. Spectroscopic Measurements under Quasi Steady State Conditions.
C. Housby-Smith, and J. E. Jenkins. Mar 78, 47p ULAP-T-54

Descriptors: *Electric arcs, *Orifice flow, *Spectroscopic analysis, High current, Chemical composition, Electrodes, Electron density (Concentration), Gas discharges, Line spectra, Temperature distribution.
Identifiers: Electron temperature.

For abstract, see STAR 1710

N79-19867/7GA PC **A05**/MF **A01**
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
Ion Confinement and Transport in a Toroidal Plasma with Externally Imposed Radial Electric Fields.
J. R. Roth, W. M. Krawczonek, E. J. Powers, Y. C. Kim, and H. Y. Hong. Mar 79, 86p NASA-TP-1411, E-9754

Descriptors: *Toroidal plasmas, Electric fields, Ionic mobility, Plasma control, Transport properties, Electrodes, Plasma diffusion, Radial distribution.
Identifiers: Plasma confinement, Plasma instability, Mathematical models.

For abstract, see STAR 1710

N79-19872/7GA PC **A04**/MF **A01**
Fom-Instituut voor Plasmafysica, Jutphaas (Netherlands).
The Influence of Diffusion and Reabsorption of Radiation on the Particle and Energy Balance of an Infinitely Long Quasi-Cylindrical Discharge in Hydrogen Gas.
W. J. Geodheer. Sep 78, 54p REPT-78-111
Subm-Sponsored in Part by Neth. Organ. For Pure Sci. Res. (Zwo) and Euratom.

Descriptors: *Gas transport, Diffusion, Ground state, *Hydrogen, Radiation absorption, Transport theory, *Collisional plasmas, Gas discharges, Mathematical models, Numerical analysis, Toroidal plasmas.
Identifiers: Lyman alpha radiation, Lyman beta radiation, Cylindrical configuration, Electron drift, Ion drift, Neutral particle transport, Atom transport, Hydrogen plasma, Hydrogen clouds, Netherlands.

For abstract, see STAR 1710

20J. Quantum Theory

AD-A064 958/2GA MF **A01**
Massachusetts Inst. of Tech., Cambridge. Lab. for Information and Decision Systems.
Modelling for Stochastic Systems and Quantum Fields.
Interim rept.,
Sanjoy K. Mitter. Dec 78, 8p LIDS-P-871, AFOSR-TR-79-0049
Grant AFOSR-77-3281
Availability: Microfiche copies only.

Descriptors: *Quantum theory, *Stochastic processes, Hilbert space, Mathematical filters, Operators(Mathematics).

No abstract available.

20K. Solid Mechanics

AD-A065 093/7GA PC **A03**/MF **A01**
Washington Univ., Seattle. Dept. of Mechanical Engineering.
A Critical Examination of a Numerical Fracture Dynamic Code.
Technical rept.,
L. Hodulak, A. S. Kobayshi, and A. F. Emery. Feb 79, 30p Rept no. TR-34
Contract N00014-76-C-0060

Descriptors: *Fracture(Mechanics), *Toughness, *Stress analysis, Finite element analysis, Dynamics, Cracking(Fracturing), Machine coding, Algorithms.

After upgrading the energy dissipation algorithm, numerical experiments were conducted to assess the reliability of the explicit dynamic finite element code, HCRACK. Two dynamic fracture specimens, i.e., the wedge-loaded rectangular DCB (RDCB) specimen and the wedge-loaded tapered DCB (TDCB) specimen, were then analyzed with this updated fracture dynamic code. Using the experimentally determined dynamic fracture toughness, K sub ID, versus crack velocity, a-dot, relation, the RDCB specimen was analyzed first by the 'propagation method' where good agreements between calculated and measured K sub ID versus a relation were observed. The calculated a versus time, t, relation was then used as input data in the 'generation method' where the resultant K sub ID were virtually identical to those obtained in the propagation method. Error analyses of the generation method were also made first by using the experimentally determined a versus t relation and secondly by artifically perturbing this relation. A TDCB specimen was then analyzed with both the propagation and generation methods by using the K sub ID versus a-dot relation established for this specimen and the measured a versus t relation, respectively. The computed K sub ID obtained by both methods were good agreement with the experimental results, showing that either approach can be used in analyzing fracture.

AD-A065 175/2GA PC **A08**/MF **A01**
Army Military Personnel Center, Alexandria, VA.
Parametrically Excited Nonlinear Multi-Degree-of-Freedom Systems.
Final rept.,
Edward G. Tezak. Mar 79, 168p
Doctoral thesis.

Descriptors: *Vibration, *Structural response, Degrees of freedom, Nonlinear analysis, Numerical analysis, Parametric instabilities, Flutter, Harmonic analysis, Resonant frequency, Panels, Beams(Structural), Theses.

An analysis of parametrically excited nonlinear multi-degree-of-freedom systems is presented. The nonlinearity considered is cubic and small so that the system of equations is weakly nonlinear. Modal damping is included and the parametric excitation is harmonic. The systems examined include those with distinct natural frequencies as well as those with a single repeated frequency. The significant role played by the existence of an internal resonance is explored in depth. The derivative-expansion version of the method of multiple scales, a perturbation technique, is used to develop solvability conditions for the various combinations of internal and parametric resonances considered. Regions where trivial and nontrivial solutions exist are defined and the stability of the solutions within each region is discussed. Nontrivial, unstable solutions have been shown to exist in regions where nontrivial stable solutions are known. Numerical solutions do not hint at the existence of these solutions. The role of internal resonance in parametrically excited systems is explored. Strong modal interaction is demonstrated as a consequence of the presence of the cubic nonlinearity and the internal resonance. Because of this modal coupling, modes other than the one excited can dominate the response. A multiplicity of jumps is shown to exist.

AD-A065 439/2GA PC **A04**/MF **A01**
California Inst. of Tech., Pasadena, Div. of Engineering and Applied Science.
Discontinuous Deformation Gradients Near the Tip of a Crack in Finite Anti-Plane Shear: An Example.
Research rept.,
James K. Knowles, and Eli Sternberg. Jan 79, 60p Rept no. TR-40
Contract N00014-75-C-0196

Descriptors: *Fracture(Mechanics), Mathematical models, Continuum mechanics, Deformation, Finite difference theory, Plane geometry, Shear stresses, Elastic properties, Edges, Nonlinear systems, Equilibrium(General), Isotropism, Incompressibility, Boundary value problems.

This investigation aims at the elastostatic field near the edges (tips) of a plane crack of finite width in an all-around infinite body, which - at infinity - is subjected to a state of simple shear parallel to the crack faces. The analysis is carried out within the fully nonlinear equilibrium theory of homogeneous and isotropic, incompressible elastic solids. Further, the particular constitutive law employed here gives rise to a loss of ellipticity of the governing displacement equation of equilibrium in the presence of sufficiently severe anti-plane shear deformations. The study reported in this paper is asymptotic in the sense that the actual crack is replaced by a semi-infinite one, while the far field is required to match the elastic field predicted near the crack tips by the linearized theory for a crack of finite width. The ensuing global boundary-value problem thus characterizes the local state of affairs in the vicinity of a crack-tip, provided the amount of shear applied at infinity is suitably small.

AD-A065 466/5GA PC **A03**/MF **A01**
Army Missile Research and Development Command, Redstone Arsenal, AL. Technology Lab.
Stress Intensities Around Surface Flaws in Cylindrical Shells by Stress Freezing.
Technical rept.,
T. L. Vandiver, J. Schaeffel, and D. G. Smith. 15 Dec 78, 45p Rept no. DRDMI-T-79-11

Descriptors: *Stress analysis, Birefringence, Cracks, Photoelasticity, Cylindrical bodies, Isotropism, Polariscopes, Least squares method, Curve fitting.
Identifiers: *Cylindrical shells.

This report documents a set of 24 tests for the determination of K sub I stress intensity factors for isotropic cylinders with longitudinal and transverse part-circular cracks. Part-circular cracks were machined into birefringent Hysol CP5 4290 photoelastic cylinders. The cylinders were then subjected to a stress freezing cycle while under one of two loading conditions: internal pressurization or extension. Slices of the cracks were made at various angles and analyzed with a photoelastic polariscope. A least-squares curve fit of the photoelastic data was used to generate K sub I stress intensity factors. K sub I data are plotted versus slice angle into the crack for various crack parameters. (Author)

20L. Solid-State Physics

AD-A064 887/3GA PC **A02**/MF **A01**
Yale Univ., New Haven, CT. Dept. of Engineering and Applied Science.
Interaction of E sub 1 and E sub 1 (+) Delta sub 1 Exciton Recombination with LO Phonons in III-V Semiconductors,
Roger L. Farrow, and Richard K. Chang. 1978, 6p Rept no. TR-5
Contract N00014-76-C-0643
Proceedings of the International Conference on Recombination in Semiconductors, Southampton, 1978.
Availability: Pub. in Solid-State Electronics, v21 p1347-1350 1978.

Descriptors: Light scattering, *Recombination reactions, Electron transitions, Gallium arsenides, Indium antimonides, Emission spectra, Spectral lines, Excitation, Reprints.
Identifiers: *Excitons, Phonons, Semiconductors(Materials).

No abstract available.

AD-A064 890/7GA PC **A02**/MF **A01**
Yale Univ., New Haven. CT. Dept. of Engineering and Applied Science.
Interference of E sub 1 and E sub 1 + delta sub 1 Hot Exciton Luminescence with LO Phonon Raman Scattering in III-V Semiconductors,
R. L. Farrow, R. K. Chang, and R. M. Martin. 1979, 5p Rept no. TR-6
Contract N00014-76-C-0643
Proceedings of the International Conference on the Physics of Semiconductors (14th), Edinburgh, 1978.
Availability: Pub. in Inst. Phys. Conf. Ser. n43 p485-488 1979.

Descriptors: *Luminescence, *Raman spectra, *Gallium antimonides, Emission spectra, Spectral lines, Lines(Geometry), Resonance, Reprints.
Identifiers: *Excitons, Phonons, Semiconductors(Materials).

No abstract available.

AD-A064 895/6GA PC **A02**/MF **A01**
Ballistic Research Labs., Aberdeen Proving Ground, MD.
Kinetics of Self-Trapped Holes in Alkali-Halide Crystals: Experiments in NaI(Tl) and KI(Tl),
H. B. Dietrich, A. E. Purdy, R. B. Murray, and R. T. Williams. 25 Jun 73, 8p
Availability: Pub. in Physical Review B, v8 n12 p5894-5901, 15 Dec 73.

Descriptors: Sodium compounds, Potassium compounds, Halides, Crystal lattices, Holes(Electron deficiencies), Reaction kinetics, Trapping(Charged Particles), Reprints.
Identifiers: *Alkali halides, Sodium iodides, Potassium iodides.

No abstract available.

AD-A064 933/5GA PC **A08**/MF **A01**
Air Force Inst. of Tech., Wright-Patterson AFB, OH. School of Engineering.
Investigation of Web-Dendrite Silicon.
Master's thesis,
Thomas J. Settecerri. Dec 78, 170p Rept no. AFIT/GEO/PH/78D-4

Descriptors: *Semiconductors, *Dendritic structure, *Silicon, *Webs(Sheets), Electrical properties, Transport properties, Doping, Boron, Gallium, Sampling, Crystal growth, Defects(Materials), Impurities, Activation energy, Theses.
Identifiers: Infrared detectors.

Web-dendrite silicon was investigated to establish its potential value as a starting material for the fabrication of infrared detector arrays. The van der Pauw techniques was used to measure the electrical transport properties of this material and assess its homogeneity. A total of eight samples were prepared from boron-doped, gallium-doped, and 'undoped' web provided by the Westinghouse Electric Corporation. The samples were evaluated with respect to growth direction and position in the web. The growth procedures of web silicon are discussed; including a description of the defects common to this material. The results are analyzed to determine uniformity, impurity concentrations, and the activation energy of the majority carriers. These particular web specimens are not suitable as candidates for device fabrication, due to the large numbers of dislocations/defects they were found to contain. It is not known whether the dislocations and defects observed are common to all dendritic-web materials. (Author)

AD-A065 062/2GA PC **A02**/MF **A01**
Massachusetts Inst. of Tech., Lexington. Lincoln Lab.
Advanced Electronic Technology.
Quarterly technical summary rept. 1 Aug-31 Oct 78,
Alan J. McLaughlin, and Alan L. McWhorter. 15 Nov 78, 21p ESD-TR-78-263
Contract F19628-78-C-0002

Descriptors: *Electronics, *Integrated circuits, *Metal nitride oxide semiconductors, *Memory devices, Digital computers, Solid state electronics,

Quantum electronics, Surface waves, Acoustic waves, Magnetic film memories, Infrared lasers, Interactive graphics, L band, Microelectronics.
Identifiers: Advanced technology, High speed, Electronic materials, Materials research, Serial to parallel converters.

This Quarterly Technical Summary covers the period 1 August through 31 October 1978. It consolidates the reports of Division 2(Data Systems) and Division 8 (Solid State) on the Advanced Electronic Technology Program. (Author)

AD-A065 067/1GA PC **A02**/MF **A01**
Northwestern Univ., Evanston, IL. Dept. of Physics and Astronomy.
Combined Fourier Transform and Discrete Variational Method Approach to the Self-Consistent Solution of the Electronic Band Structure Problem within the Local Density Formalism,
A. Zunger, and A. J. Freeman. 15 Mar 76, 23p AFOSR-TR-77-0262
Grant AFOSR-76-2948
Availability: Pub. in International Jnl. of Quantum Chemistry Symposium, n10 p383-403 1976.

Descriptors: *Band theory of solids, *Electronic states, Charge density, Quantum chemistry, Variational methods, Fourier transformation, Potential theory, Hartree-Fock approximation, Reprints.
Identifiers: Muffin tin potentials.

No abstract available.

AD-A065 116/6GA PC **A04**/MF **A01**
Massachusetts Inst. of Tech., Lexington. Lincoln Lab.
Solid State Research, 1978:3.
Quarterly technical summary rept. 1 May-31 Jul 78,
Alan L. McWhorter. 15 Aug 78, 62p ESD-TR-78-245
Contract F19628-78-C-0002

Descriptors: *Solid state electronics, Lasers, Quantum electronics, Microelectronics, Transducers, Surface waves, Photodiodes, Arrays, Spectroscopy, Infrared lasers, Laser materials, Tunable lasers, Semiconducting films, Charge coupled devices.
Identifiers: SAW devices.

This report covers in detail the solid state research work of the Solid State Division at Lincoln Lab. The topics covered are Solid State Device Research, Quantum Electronics, Materials Research, Microelectronics, and Surface-Wave Technology.

AD-A065 186/9GA PC **A02**/MF **A01**
University of Southern California, Los Angeles.
Non-Localized Impact Ionization in Semiconductors.
Final rept. 1 Aug 74-31 Jul 77,
C. R. Crowell, and Chung-Whei Kao. Feb 79, 13p ARO-12496.3-EL
Grant DAHC04-75-G-0002

Descriptors: *Ionization, Photon bombardment, Schottky barrier devices, Transport properties, Gallium arsenides, Indium phosphides, Interfaces, Metals, Momentum transfer, Reports, Abstracts.
Identifiers: *Semiconductors(Materials), Markov chains.

Studies have been directed towards improving the understanding of the 'nonlocalized' nature of impact ionization: i.e., the fact that carriers must be field accelerated by at least the threshold energy for impact ionization before they can create an electron-hole pair. Work has been directed specifically towards GaAs and InP in Schottky barrier configurations. For GaAs, studies have shown that momentum and energy conservation impose an effective density of available states that grows as the 2 1/2 power of the energy in excess of threshold as opposed to the 3 1/2 and 5 power alternatives. It has also been that the capture cross sections that we can deduce from cascade production by high energy primary radiation are consistent with the modeling needed for the ionization coefficient. This problem was investigated using a Markov formulation and the results of the energy required per pair produced are strongly influenced by the ratio of pair production cross section to phonon scattering cross section at a primary energy of twice the threshold energy. The energy dependence about this energy serves mainly to perturb the result.

AD-A065 202/4GA PC **A02**/MF **A01**
Illinois Univ. at Urbana-Champaign.
Study of Thermally Induced Deep Levels in Al-Doped Si,
R. L. Marchand, and Chih-Tang Sah. 7 Jul 76, 7p AFOSR-TR-77-0247
Grant AFOSR-76-2911
Availability: Pub. in Jnl. of Applied Physics, v48 n1 p336-341 Jan 77.

Descriptors: *Silicon, Doping, Aluminum, Heat treatment, Capacitance, Holes(Electron deficiencies), Reprints.

No abstract available.

AD-A065 221/4GA PC **A02**/MF **A01**
Louisiana State Univ., Baton Rouge. Dept. of Physics and Astronomy.
Formation Energy of a Single Vacancy in Aluminum,
S. P. Singhal, and J. Callaway. 1978, 4p LSU-78-7, LSU-SPS-AL-R8, ARO-13228.5-P
Grant DAAG29-77-G-0096
Proceedings of International Conference on Atomic Defects in Metals, Oct 76, Argonne, IL.
Availability: Pub. in Jnl. of Nuclear Materials, n69-70 p636-637 1978.

Descriptors: *Aluminum, Atomic properties, Defects(Materials), Energy bands, Vacancies(Crystal defects), Reprints.
Identifiers: Heat of formation.

No abstract available.

AD-A065 227/1GA PC **A02**/MF **A01**
California Univ., Irvine. Dept. of Physics.
The g Tensor of d Holes in Palladium,
T. S. Rahman, J. C. Parlebas, and D. L. Mills. 30 May 78, 15p TR-78-20, AFOSR-TR-79-0133
Contract F49620-78-C-0019
Availability: Pub. in Jnl. of Physics, F: Metal Physics, v8 n12 p2511-2524 1978.

Descriptors: *Palladium, Magnetic properties, Holes(Electron deficiencies), Tensor analysis, Ground state, Mathematical analysis, Reprints.

No abstract available.

AD-A065 243/8GA PC **A02**/MF **A01**
Stanford Univ., CA. W. W. Hansen Labs. Hansen Labs. of Physics.
Synthesis and Stability of Nb3Ge Made by Electron-Beam Codeposition,
A. B. Hallak, R. H. Hammond, and T. H. Geballe. 26 Apr 76, 5p AFOSR-TR-77-0242
Grant AFOSR-73-2435
Availability: Pub. in Applied Physics Letters, v29 n5 p314-316, 1 Sep 76.

Descriptors: *Superconductors, *Transition temperature, Thin films, Niobium compounds, Germanium compounds, Fabrication, Deposition, Reprints.

No abstract available.

AD-A065 307/1GA PC **A02**/MF **A01**
Wisconsin Univ.-Milwaukee, Dept. of Physics.
Magnetic-Field-Dependent Attenuation of Surface Waves by Nickel Thin Films,
Charles Krischer, I-an Feng, Jeffrey B. Block, and Moises Levy. 4 Mar 76, 5p AFOSR-TR-77-0231
Grants AFOSR-76-2893, NSF-GK-43320
Availability: Pub. in Applied Physics Letters, v29 n2 p76-77, 15 Jul 76.

Descriptors: *Acoustic attenuation, Surface waves, Magnetic fields, *Nickel, Thin films, Hysteresis, Reprints.
Identifiers: Acoustic surface waves.

No abstract available.

AD-A065 322/0GA PC **A03**/MF **A01**
Varian Associates, Inc., Palo Alto, CA.
Investigation of InP Technology.
Interim rept. 1 Aug 77-1 Aug 78,
George A. Antypas. Jan 79, 39p SCIENTIFIC-1, RADC-TR-78-286
Contract F19628-77-C-0141

Descriptors: *Semiconductors, *Indium phosphides, *Crystal growth, Single crystals, Polycrystalline, Purity, Photoluminescence, Epitaxial growth, Zinc, Doping, Dislocations, Crystal structure, Density.

Undoubtedly InP is becoming a very important semiconductor, in particular for optoelectronic applications. Although InP-based device results are appearing with increased frequency in both microwave and optoelectronic areas, substrate growth and characterization have been limited to a few government contract reports. This program is aimed at the investigation of InP-based technology from polycrystalline synthesis to epitaxial growth. Of primary consideration is the development of technology for reliably synthesizing polycrystalline InP from the elements. Even though the growth of single-crystal InP is well developed, based on the commercial equipment for LEC-growth of GaAs and GaP, very little information is available on the synthesis of InP from the elements.

AD-A065 336/0GA PC **A02**/MF **A01**
IBM Thomas J. Watson Research Center, Yorktown Heights, NY.
Exploratory Investigation for Quantum Effects in Semiconductor Heterostructures,
L. Esaki. 1977, 10p ARO-15229.4-P
Contract DAAG29-78-C-0007
Availability: Pub. in Proceedings of the International Vacuum Congress (7th) and the International Conference on Solid Surfaces (3nd), 12-16 Sep 77, p1907-1914.

Descriptors: *Heterojunctions, Quantum electronics, Aluminum gallium arsenide, Light scattering, Raman spectra, Reprints.
Identifiers: *Semiconductors(Materials), Shubnikov-de Haas effect, Superlattices, Magnetoresistivity.

No abstract available.

AD-A065 364/2GA PC **A02**/MF **A01**
Cornell Univ., Ithaca, NY. Dept. of Electrical Engineering.
Investigation of Advanced Technology and High Field Electronic Properties of InP for Microwave Devices.
Final rept. 15 Nov 75-14 Nov 78,
Lester F. Eastman, and Colin E. C. Wood. Jan 79, 7p ARO-13405.4-EL
Grants DAAG29-77-G-0066, DAAG29-76-G-0082

Descriptors: *Microwave equipment, *Indium phosphides, Epitaxial growth, Liquid phases, Gallium arsenides, Beryllium, Hydrogen, Water vapor, Annealing, Silicon, Mobility.
Identifiers: Silicon monoxide.

Progress in the understanding of preparation and properties of InP material has been made in the following main areas. First in the area of liquid phase epitaxial growth a breakthrough has been made in the understanding of parameters required for the preparation of high purity material. By secondary ion mass spectrometry the single most important residual donor impurity in layers was found to be silicon. Seocnd, there is a dynamic production of volatile SiO which contaminates the melt from the walls of the growth tube. Calculations of the thermodynamics of these systems showed that the silicon content could be reduced by baking a lower and lower temperatures.

AD-A065 372/5GA PC **A02**/MF **A01**
Minnesota Univ., Minneapolis. Dept. of Electrical Engineering.
Flicker Noise in Semiconductors: Not a True Bulk Effect,
A. van der Ziel. 10 Jul 78, 3p ARO-14273.7-EL
Grant DAAG29-77-G-0106
Availability: Pub. in Applied Physics Letter, v33 n10 p883-884, 15 Nov 78.

Descriptors: *Field effect transistors, *Bulk semiconductors, Noise, Silicon.
Identifiers: Density noise, Mobility noise.

No abstract available.

AD-A065 397/2GA PC **A02/MF A01**
University of Southern California, Los Angeles. Dept. of Electrical Engineering and Materials Science.
MNOS Charge versus Centroid Determination by Staircase Charging,
Kurt Lehovec, Chih-Hong Chen, and Andre Fedotowsky. 20 Jan 78, 8p ARO-14744.2-EL
Grants DAAG29-77-G-0123, DAAG29-78-G-0100
Availability: Pub. in IEEE Transactions on Electron Devices, vED-25 n8 p1030-1036 Aug 78.

Descriptors: *Metal nitride oxide semiconductors, *Memory devices, Pulses, Electric charge, Storage, Circuit analysis, Nondestructive testing, Reprints.

No abstract available.

AD-A065 434/3GA PC **A02/MF A01**
Purdue Univ., Lafayette, IN. Dept. of Chemistry.
Low Energy Ion Impact Phenomena on Single Crystal Surfaces,
Don E. Harrison, Jr., P. W. Kelly, Barbara J. Garrison, and Nicholas Winograd. 14 Feb 78, 14p AFOSR-TR-79-0153
Grants AFOSR-76-2974, NSF-MPS75-9308
Sponsored in part by Grant NSF-DMR72-3-19A04.
Availability: Pub. in Surface Science, v76 p311-322 1978.

Descriptors: *Ion bombardment, *Single crystals, Sputtering, Surface properties, Copper, Low energy, Argon, Reprints.

No abstract available.

N79-19113/6GA PC **A04/MF A01**
California Univ., San Diego, La Jolla. Inst. for Pure and Applied Physical Sciences.
Chemical Vapor Deposition of High T sub C Superconductors.
Final Report, 1 May 1975 - 31 Dec. 1978.
G. W. Webb, and J. J. Engelhardt. 31 Dec 78, 60p NASA-CR-158241
Grant NSG-3055

Descriptors: *Superconductors, *Vapor deposition, Alloys, Brittleness, Chemical composition, Ductility, Metal films.
Identifiers: *Chemical vapor deposition.

For abstract, see STAR 1710

N79-19901/4GA PC **A03/MF A01**
Royal Aircraft Establishment, Farnborough (England).
Mechanical Properties and Cleavage Fracture of Iron Single Crystals at 77 K.
F. Terasaki. Mar 78, 31p RAE-LIB-TRANS-1924
Tran-Transl. Into English from Acta Met. (New York), V. 15, 1967 p 1057-1072.

Descriptors: *Iron, *Fractures(Materials), Mechanical properties, *Single crystals, Crystallography, Specimen geometry, Stress analysis, Stress-strain diagrams, Tensile stress, Twinning.
Identifiers: Translations, Cleavage.

For abstract, see STAR 1710

PB-293 293/7GA PC **A07/MF A01**
National Engineering Lab. (NBS), Washington, DC.
Semiconductor Measurement Technology: DISTRIB I, An Impurity Redistribution Computer Program.
Final rept. Jul 73-Dec 75,
David Gilsinn, and Richard Kraft. Feb 79, 132p NBS-SP-400-57
Sponsored in part by Defense Advanced Research Projects Agency, Arlington, VA. Library of Congress catalog card no. 79-600002.

Descriptors: *Silicon, *Impurities, Oxidation, Semiconductors(Materials), Mathematical models, Flow charts, Computer programs, Fortran.
Identifiers: DISTRIB 1 computer program.

This report provides documentation of a computer program which calculates the redistribution of impurities in silicon during a single oxidation step. The documentation provides: (1) a physical and mathematical description of the redistribution process, (2) a detailed description of the discretization of the appropriate partial differential equations, and, (3) a complete description of the Fortran program for computing the solution.

20M. Thermodynamics

AD-A065 301/4GA PC **A06/MF A01**
California Inst. of Tech., Pasadena. Graduate Aeronautical Labs.
Nonlinear Interactions in Superfluid Dynamics: Supercritical Counterflow and Shockwaves.
Final Scientific rept.,
H. W. Liepmann, Philip L. Rogers, Timothy N. Turner, and Jack L. Wise. 30 Nov 78, 114p AFOSR-TR-79-0130
Contract F44620-75-C-0038

Descriptors: *Superfluidity, *Supercritical flow, Helium, Shock waves, Shock tubes, Cryogenics, Boundary layer transition, Heat transmission, Capillary tubes, Mach number, Reynolds number.
Identifiers: Second sound, Liquid helium, GALCIT program.

It was the purpose of the program to investigate some aspects of the fluid mechanics of LHell, in particular nonlinear phenomena such as turbulence and shock waves and their effect on the critical conditions in Hell. The major accomplishments which resulted from the GALCIT research program are: The development of the first cryogenic shock tube for the production of strong shock waves. In this small (1 inch diameter) tube, shock Mach numbers of M = 42 in Helium gas have been reached; the extension of the cryogenic tube techniques to work with liquid Helium II led to the first careful mapping of the nonlinear wave diagrams in He II, involving both first sound and second sound shock waves; ultr-second sound waves with frequencies up to 1 MHz have been used as a velocimeter for He II counterflow; a similarity rule was developed on the two-fluid equation with the additional Gorter-Mellink terms. This rule permits the reduction of all known critical heat flow experiments in capillaries and tubes to a single number reminiscent of a critical Reynolds number for laminar-turbulent transition in classical fluid mechanics. (Author)

AD-A065 507/6GA PC **A02/MF A01**
Massachusetts Inst. of Tech., Cambridge. Research Lab. of Electronics.
Thermal Fluctuations in Driven Nonlinear Resistive Systems,
Madhu S. Gupta. 17 Feb 78, 8p
Contract DAAB07-76-C-1400
Availability: Pub. in Physical Review A, v18 n6 p2725-2731 Dec 78.

Descriptors: *Dissipation factor, Equilibrium(General), Thermodynamics, Entropy, Perturbations, Thermal properties, Reprints.
Identifiers: Nonlinear systems, Resistance.

No abstract available.

20N. Wave Propagation

AD-A065 188/5GA PC **A02/MF A01**
Michigan Univ., Ann Arbor. Radiation Lab.
Low-Frequency Scattering by Rectangular Dielectric Particles,
D. F. Herrick, and T. B. A. Senior. 28 Jun 76, 11p AFOSR-TR-77-0718
Grants AFOSR-72-2262, NSF-ENG-75-03880
Availability: Pub. in Applied Physics, v13 p175-183 1977.

Descriptors: *Electromagnetic scattering, *Dielectrics, Polarization, Tensor analysis, Permeability(Magnetic), Reprints.

No abstract available.

AD-A065 199/2GA PC **A02/MF A01**
Polytechnic Inst. of New York, Brooklyn. Dept. of Electrical Engineering and Electrophysics.
Evanescent Waves,
Leopold B. Felsen. 18 Feb 76, 12p AFOSR-TR-77-0236
Contract F44620-69-C-0047, Grant NSF-ENG69-00553
Availability: Pub. in Jnl. of the Optical Society of America, v66 n8 p751-760 Aug 76.

Descriptors: *Evanescent waves, Wave propagation, Plane waves, Tracking, Shadows, Dielectric waveguides, Curved profiles, Reprints.
Identifiers: Gaussian beams.

No abstract available.

AD-A065 310/5GA PC **A02/MF A01**
Rochester Univ., NY.
Radiative Energy Transfer in the Presence of Random Source Distributions,
M. S. Zubairy. 1978, 10p ARO-14074.10-P
Grant DAAG29-77-G-0006
Availability: Pub. in Coherence and Quantum Optics IV, p459-467 1978.

Descriptors: *Energy transfer, *Electromagnetic fields, Radiant intensity, Stochastic processes, Transfer functions, Reprints.
Identifiers: Huristic methods.

No abstract available.

AD-A065 374/1GA PC **A02/MF A01**
Rochester Univ., NY. Inst. of Optics.
On the Question of the Existence of Nonradiating Primary Planar Sources of Finite Extent,
Arl T. Friberg. 24 Feb 78, 5p ARO-14074.11-P
Contract DAAG29-77-G-0006
Availability: Pub. in Jnl. of the Optical Society of America, v68 n9 p1281-1283 Sep 78.

Descriptors: *Electromagnetic wave propagation, *Electric charge, *Oscillation, Sources, Distribution, Reprints.

No abstract available.

AD-A065 411/1GA PC **A03/MF A01**
Naval Postgraduate School, Monterey, CA.
A Radiowave Propagation Data Acquisition System.
Interim rept. Oct 77-Sep 78,
Jeffrey B. Knorr. Oct 78, 38p Rept no. NPS-62-79-001

Descriptors: *Ionospheric propagation, *Radio reception, *Data acquisition, Atmospheric refraction, Electronic recording systems, Radiofrequency power, Analog to digital converters, Diurnal variations, Intermediate frequencies, Magnetic tape, Computer programs, Clocks, Sampling, Fading(Electromagnetic waves).
Identifiers: Digital voltmeters, Digital clocks, Self starting, Communication channels.

This report describes the hardware and software for implementation of a computer controlled system for the acquisition of radiowave propagation data. The system consists of an instrumentation receiver, a digital voltmeter to sample the detected IF output of the receiver, a digital clock, and a controller. Using the software described herein the system samples the received signal about seven times per second. The data samples are processed to provide hourly values of the average and median signal power levels and the number of fades of depth 10 db, 15 db, 20 db, 25 db and 30 db below the median signal level for the previous hour. The cumulative distribution of signal power level is determined for each day. Average duration of a fade of specified depth may be calculated from the above information. Processed data are stored in tape files. As currently configured the system will store data for an entire month. Tapes may be removed and replaced periodically to obtain a permanent record. The system has the capability to start up automatically after a power failure. (Author)

21. PROPULSION AND FUELS

21B. Combustion and Ignition

AD-A065 454/1GA PC **A02/MF A01**
Office of Naval Research, London (England).
International Symposium on Combustion(17th), Held at University of Leeds, on 20-25 August 1978.
Conference rept.,

S. N. B. Murthy, I. Glassman, and J. R. Patton.
29 Dec 78, 17p Rept no. ONRL-C-13-78

Descriptors: *Combustion, *Propellants, *Explosives, *Coal gas, Symposia, Reports, Soot, Turbulent flow, Fires, Explosions, Deflagration, Detonations, Reaction kinetics, Measuring instruments, International.
Identifiers: *Meetings.

The Seventeenth International Symposium on Combustion convened 20-25 August 1978 at the University of Leeds, UK. Sponsored by the Combustion Institute, the Symposium contained three colloquia on coal combustion, turbulent-combustion interaction, and fire and explosion. Papers discussed in this report are in the areas in which advances appear to be stimulating and technologically useful, such as soot, turbulent-combustion interactions, fire and explosion, coal combustion, propellants and explosives, deflagration to detonation transition, kinetics, and new measurement techniques. (Author)

N79-19112/8GA PC **A14**/MF **A01**
Boeing Commercial Airplane Co., Seattle, WA.
Development of Fire Test Methods for Airplane Interior Materials.
Final Report.
E. A. Tustin. Oct 78, 301p NASA-CR-160119, D6-48071
Contract NAS9-15168

Descriptors: *Aircraft safety, *Combustion products, *Fire prevention, Aircraft design, Fireproofing, Fuselages, Hazards, Jet engine fuels.
Identifiers: Boeing 737 aircraft, Boeing 707 aircraft.

For abstract, see STAR 1710

N79-19159/9GA PC **A05**/MF **A01**
Lockheed-California Co., Burbank.
Development of Processes and Techniques for Molding Thermally Stable, Fire-Retardant, Low-Smoke-Emitting Polymeric Materials.
Technical Report, 1 Oct. 1977 - 28 Feb. 1979.
B. Silverman. Mar 79, 87p NASA-CR-151862
Contract NAS9-15406

Descriptors: *Molding materials, Polymer matrix composite materials, Smoke, *Thermal stability, Aircraft compartments, Compressibility, Product development.
Identifiers: *Heat resistant plastics.

For abstract, see STAR 1710

21C. Electric Propulsion

AD-A065 482/2GA PC **A03**/MF **A01**
Aerospace Corp., El Segundo, CA. Ivan A. Getting Labs.
Magnetospheric and Ionospheric Impact of Large-Scale Space Transportation with Ion Engines.
Interim rept.,
Yam T. Chiu, Janet G. Luhmann, Barbara K. Ching, Michael Schulz, and Donald J. Boucher, Jr. 25 Jan 79, 45p TR-0079(4960-04)-3, SAMSO-TR-79-3
Contract F04701-78-C-0079

Descriptors: *Ion engines, *Exhaust gases, *Environmental protection, *Ionosphere, Magnetosphere, Emission control, Plasmas(Physics), Electric propulsion, Deep space, Space transportation.
Identifiers: Forecasting, Air pollution.

Future large-scale space missions with payloads of > or = 10 million Kg (> or = 10,000 tons), such as the proposed Solar Power Satellite and Space Colonization, will probably require deep-space transportation systems based on the high specific-impulse ion engine. It is noted in this paper that the ion exhaust emissions corresponding to the proposed large payloads required for such missions may introduce basic modifications in the composition and dynamics of the ionosphere and magnetosphere. Some effects are identified that such modifications may induce upon other space-systems such as earth sensors, radiation belt dosage environment and signal scintillation due to beam-plasma interactions. It is noted that, because the space environment is tenuous, there is an interaction of sorts among such large-scale space systems and other earth-oriented space systems. The architectural design of such large-scale systems must take into account not only the efficient functioning of their primary mission objectives but also their influence upon the operations of other space systems. (Author)

21D. Fuels

NTIS/PS-79/0405/5GA PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Coal Tar Technology (A Bibliography with Abstracts).
Rept. for 1964-Apr 79,
Diane M. Cavagnaro. May 79, 172p*
Supersedes NTIS/PS-78/0407.

Descriptors: *Bibliographies, *Coal tar, Technology, Coal gasification, Environmental surveys, Synthesis(Chemistry), Pollution, Chemical analysis, Wood preservatives, Toxicology.

The bibliography covers different aspects of coal tar. The citations include coal tar production from coal gasification, synthesis of chemicals from coal tar, toxicology, pollution, chemical analysis, and the use of coal tar as a wood preservative. (This updated bibliography contains 163 abstracts, 25 of which are new entries to the previous edition.)

NTISUB/E/146 Subscription
Department of Energy, Oak Ridge, TN. Technical Information Center.
Fossil Energy Update, 1979.
Monthly repts.
1979, 12 issues
Paper copy available on subscription, North American Continent price $27.50/year; single copy price PC$3.25, MF$3.00; all others write for quote.

Descriptors: *Fossil fuels, *Bibliographies, Coal, Petroleum, Natural gas, Oil shales, Tar sands, Hydrogen production, Hydrocarbon fuels, MHD generators, Electric power generation, Methyl alcohol, Synthetic fuels, Carbonization, Desulfurization, Hydrogenation, Coal gasification, Coal liquefaction, Pyrolysis, Solvent extraction, Byproducts, Waste management, Environmental impacts, Exploration, Coal mining, Coal handling, Marketing, Regulations, Safety engineering, Storage, Site surveys, Abstracts.

Fossil Energy Update (FEU) provides abstracting and indexing coverage of current scientific and technical reports, journal articles, conference papers and proceedings, books, patents, theses, and monographs from all sources on fossil energy. The subject matter covered by FEU includes coal, petroleum, natural gas, oil shale, hydrogen production, hydrocarbon and alcohol fuels, electric power engineering, and magnetohydrodynamic generators.

N79-19450/2GA PC **A06**/MF **A01**
Jet Propulsion Lab., Pasadena, CA.
Bioconversion Study Conducted by JPL.
J. Kalvinskas. 15 Nov 78, 124p NASA-CR-158228, JPL-PUB-79-9
Contract NAS7-100

Descriptors: *Biomass energy production, Biomass, Fuels, Recommendations, Thermochemistry.
Identifiers: *Synthetic fuels, Chemical feedstocks, Biological energy conversion, Forecasting, Economics.

For abstract, see STAR 1710

PB-293 165/7GA PC **A07**/MF **A01**
Lockman and Associates, Monterey Park, CA.
Recovery, Processing, and Utilization of Gas from Sanitary Landfills.
Final rept. Mar 77-Sep 78,
Robert K. Ham, Kenneth K. Hekimian, Stanley L. Katten, Wilbur J. Lockman, and Ronald J. Loty. Feb 79, 147p* EPA/600/2-79/001
Contract EPA-68-03-2536

Descriptors: *Gas production, *Earth fills, *Methane, *Solid waste disposal, Materials recovery, Utilization, Performance evaluation, Design criteria, Feasibility, Fuels, Cost analysis, Substitutes, Sites, Technology, Decomposition.
Identifiers: Refused derived fuels, Chemical feedstock, Land disposal, Manufactured gas, Synthetic gas, *Sanitary landfills.

The report is organized into seven sections. Following the introduction and conclusions and recommendations, are sections describing: the three-component gas generation phenomenon; analysis and comparison of alternative gas utilizations including the processes necessary to prepare the gas for use; an evaluation of various landfill design approaches and operations techniques that show promise for enhancing gas generation, recovery efficiency and quality; recommendations for research, development and demonstration projects deemed necessary to develop an adequate data base to proceed with more in depth engineering evaluations of the various options. Overall, it is shown that landfill gas recovery, processing and utilization is technically feasible and can be economically viable.

PB-293 328/1GA PC **A07**/MF **A01**
Battelle Columbus Labs., OH.
Fuel Contaminants: Volume 3. Control of Coal-related Pollutants.
Final rept. Jul 75-76,
E. J. Mezey, Seongwoo Min, B. R. Allen, W. C. Baytos, and Surjit Singh. Jan 79, 135p EPA/600/7-79/025A
Contract EPA-68-02-2112
See also Volume 2, PB-260 475.

Descriptors: *Fuel contaminants, *Coal preparation, *Desulfurization, Air pollution, Coal processing, Sulfur, Nitrogen, Separation, Feasibility, Bacteria, Agglomeration, Pyrite, Extraction, Filtration, Coal liquefaction, Residues, Technology, Forecasting, Process charting, Performance evaluation.
Identifiers: *Air pollution abatement, *Coal liquids, Refuse derived fuels.

The report gives results of a study to identify strategies for removing pollutants from coal and coal-derived liquids. Of the approaches considered, five were selected for preliminary assessment by experimentation (a sixth, improvements in pyrite liberation from coal, was not studied because of significant advances by others). Study findings include: (1) biological action on coal-derived liquids--prospects of using nonmutated bacteria for sulfur and/or nitrogen removal from coal liquids appear small; (2) enhancement of pyrite removal during immiscible fluid agglomeration--removal equivalent to that obtained for float-sink analysis was obtained by pretreatment and oil agglomeration, the same technique found to be effective for recovering greater than 90% of coal from coal cleaning plant fines; (3) extraction of clean fuels from coal liquids--light hydrocarbons can be used to extract 83% of coal liquid at supercritical conditions to yield a low sulfur and nitrogen fuel; (4) concentration of organic sulfur and nitrogen and ash from coal liquids--up to 76% of the sulfur and about 10% of the nitrogen can be removed by passing coal liquids over various special porous media; and (5) conversion of coal liquefaction residues to environmentally acceptable fuels--treatment of coal liquefaction residue with H2/CO mixtures reduces nitrogen content by as much as 14%.

PB-293 529/4GA PC **A02**/MF **A01**
Environmental Protection Agency, Ann Arbor, MI. Standards Development and Support Branch.
Exhaust Emissions and Fuel Consumption of a Heavy-Duty Gasoline Powered Vehicle Over Various Driving Cycles - 361 Cubic Inch 1966 Ford F-600.
Technical rept.,
Richard Nash. Aug 78, 24p HDV-78-08

Descriptors: *Air pollution, *Exhaust emissions, *Fuel consumption, Dynamometers, Trucks, Tests, Gasoline.
Identifiers: *Heavy duty vehicles.

This report contains the results of exhaust emission tests on one precontrolled heavy-duty gasoline truck. These tests were run on a chassis dynamometer over various cycles developed under the CAPE-21 cycle generation program. This effort is a continuation of the test program which initially ex-

amined a 1977 GMC truck; it was designed to answer some questions which developed during that testing. This test sequence was designed to investigate in more detail the effect of various driving cycles upon vehicle emissions and fuel consumption. For this reason, road load drag force was not varied as in the previous experiment. For each driving cycle three tests were run with the vehicle in a fully warmed-up condition. Also, for this test sequence, several new cycles were generated which had not been run during the previous test sequence on the GMC truck. (See Technical Support Report for Regulatory Action, Exhaust Emissions and Fuel Consumption of a Heavy-Duty Gasoline Powered Vehicle over Various Driving Cycles, 427 Cubic Inch 1977 California GMC 6500, June 1978). The final phase was a sequence of four tests to investigate cold and warm start effects.

PB-293 530/2GA PC **A03/MF A01**
Environmental Protection Agency, Ann Arbor, MI. Standards Development and Support Branch.
Exhaust Emissions and Fuel Consumption of a Heavy-Duty Gasoline Powered Vehicle Over Various Driving Cycles - 427 Cubic Inch 1977 California GMC 6500.
Technical rept.,
Richard Nash. Aug 78, 42p HDV-78-09

Descriptors: *Air pollution, *Exhaust emissions, *Fuel consumption, Dynamometers, Sensitivity, Tests, Gasoline.
Identifiers: *Heavy duty vehicles.

This report presents exhaust emission and fuel economy measurements for one heavy-duty gasoline fueled vehicle operated over various driving cycles. These driving cycles were developed from actual in-use operational data collected in New York and Los Angeles under the CAPE-21 program. In each location, both freeway and non-freeway operational parameters were recorded. A data matrix (relating speed, acceleration and frequency of occurrance) was prepared for each city and class of operation. Several different cycles were generated for each matrix. Evaluation of the concept of chassis testing for heavy-duty vehicles were the major purpose of this project. The test program was designed to measure the sensitivity of exhaust emissions and fuel economy to the various driving cycles and road load conditions. In addition, a brief attempt was made to characterize cold start emissions and the effects of increased vehicle frontal area. Three of the fully transient cycles were 'linearized' (steady state cruises and constant accelerations) to see if a simpler type of transient operation could accurately predict fuel economy. Finally, experiments were undertaken to measure the instantaneous exhaust dilution ration in order to assess the adequacy of the CVS flow rate.

21E. Jet and Gas Turbine Engines

AD-A064 944/2GA PC **A04/MF A01**
General Electric Co., Cincinnati, OH. Aircraft Engine Group.
Analytical Derivatives.
Final technical rept. June-Sep 78,
D. F. Berg, W. C. Colley, and G. L. Converse. Dec 78, 72p R78AEG517, AFAPL-TR-78-101
Contract F33615-78-C-2203

Descriptors: *Variable cycle engines, *Aircraft engines, Power supplies, Weapon systems, Control systems, Iterations, Analytic functions, Efficiency, Computerized simulation, Air flow.
Identifiers: Newton-Raphson method, *Jet engines.

The variable cycle engines now being studied for preliminary engine-aircraft design have greatly increased the complexity of engine modeling, control element design, and cycle calculation relative to the simpler turbofan and turbojet engines which preceeded them. The production of engine data is the major computations cost element in mission studies and optimization investigations; this problem can become even more severe in the future unless improvements in cycle calculations and component modeling techniques are developed and introduced now. The current method of obtaining balanced cycle data points is to use the simultaneous Newton-Raphson iteration method. The partial derivatives are obtained by numerical differentiation. This report documents the results obtained by calculating the partial drivatives from analytical expressions obtained by differentiating a cycle deck. Examples illustrating both the method of obtaining the analytical derivatives as well as setting up the control logic are given. A cost comparison was carried out between two engine simulations using numerical derivatives and the same pair of engine simulations using analytical derivatives. A data matrix consisting of the same 411 operating points was used for each of the engine simulation comparisons.

AD-A065 075/4GA PC **A04/MF A01**
United Technologies Research Center, East Hartford, CT.
Nonlinear Stochastic Control Design for Gas Turbine Engines.
Final technical rept. 1 Apr 78-31 Mar 78,
Florence A. Farrar, and Gerald J. Michael. Jun 78, 55p UTRC/R78-942577-13, ONR-CR215-247-2F
Contract N00014-76-C-0710
See also Rept. no. UTRC-R77-942577-6 dated Mar 77, AD-A040 901.

Descriptors: *Gas turbines, *Turbofan engines, Stochastic control, Feedback, Closed loop systems, Aircraft engines, Nonlinear analysis, Multivariate analysis, Estimates, Switching logic.
Identifiers: F-100 engines, F-401 engines.

Synthesis procedures for nonlinear stochastic feedback control of gas turbine engines were developed and evaluated. Modern estimation and control procedures based upon separating the stochastic and deterministic aspects of the control problem were employed. The resulting closed-loop control consists of nonlinear deterministic feedback control logic designed using piecewise-linear/piecewise-optimal techniques, and an estimator designed using nonlinear filtering logic. Engine variables estimated from noise-corrupted measurements are fed back through the deterministic control logic to generate commanded inputs to the engine. Mode-switching logic was developed to provide smooth transition between small-signal regulation and large-signal transient modes of estimator/controller operation.

AD-A065 128/1GA PC **A07/MF A01**
General Electric Co., Lynn, MA. Aircraft Engine Group.
Assessment of Augmented Electronic Fuel Controls for Modular Engine Diagnostics and Condition Monitoring.
Final rept. Sep 77-Jun 78,
Daniel R. Gilmore, Jr., Harold J. Jordan, and Alan D. Pisano. Dec 78, 150p USARTL-TR-78-32
Contract DAAJ02-77-C-0065

Descriptors: *Turboshaft engines, *Modules(Electronics), Control systems, Monitoring, Diagnosis(General), Modular construction, Maintainability, Life cycle costs, Faults, Error analysis, Digital systems, Failure(Mechanics), Ground support, Flight testing, Fuel systems, Detectors, Kalman filtering.
Identifiers: T-700-GE-700 engines.

Fault isolation to the module and line replaceable unit (LRU) level by means of a Diagnostic and Condition Monitoring (D and CM) System integrated with a Full-Authority Digital Electronic Control (FADEC) is evaluated in this study. A preliminary assessment of the D and CM system parameters required for performing the diagnostic functions on the current T700 engine is also included in the study. (Author)

AD-A065 144/8GA PC **A11/MF A01**
Pratt and Whitney Aircraft Group, West Palm Beach, FL. Government Products Div.
Lo-Frequency Augmentor Instability Study.
Final rept. 1 Mar 76-30 Jul 78,
P. L. Russell, and G. Brant. 15 Dec 78, 230p PWA-FR-10397, AFAPL-TR-78-82
Contract F33615-76-C-2024

Descriptors: *Turbofan engines, *Afterburners, *Combustion stability, Gas flow, Mixing, Augmentation, Flame holders, Low frequency, Fuel air ratio, Altitude, Mach number, Duct inlets, Mathematical models, Air flow, Oscillation, Temperature, Pressure.

With the advent of the mixed-flow afterburner in turbofan engines, a type of low-frequency instability known as rumble became a serious problem. Rumble occurs mainly at high fuel-air ratios and at flight Mach numbers and altitudes where low duct inlet air temperatures and pressures exist. 'Cut and try' methods of solution during engine development have been partially successful, but very expensive. To aid the development engineer in designing rumble-free afterburners an analytical model has been formed. The model was evolved in conjunction with and checked by two experimental programs. Rumble mechanisms investigated early in this study involved system airflow dynamics, combustion efficiency oscillations, fuel vaporization and recirculation wake energy. The model was then refined and extended to include the mixed flow experienced in a turbofan augmentor. Predictions were made for the effects of altitude, fan stream fuel-air ratio, fan stream temperature, core stream fuel-air ratio, and fan duct pressure loss. The major conclusion from the modeling effort was that the efficiency falloff in the fan stream at high fuel-air ratio causes rumble. This was verified with engine altitude tests at NASA Lewis Research Center with several augmentor configurations. These tests included heat addition to the fan stream, fuel-air distribution changes and spraybar to flameholder length variation. The basic formulation of the model, the mixed flow augmentor model, predictions, and the experimental programs are discussed. (Author)

AD-A065 388/1GA PC **A11/MF A01**
Kaman AviDyne, Burlington, MA.
Wind-Tunnel Shock-Tube Simulation and Evaluation of Blast Effects on an Engine Inlet.
Final rept. Oct 75-Dec 77,
J. Ray Ruetenik, and Robert F. Smiley. 15 Mar 78, 240p KA-TR-147, DNA-4590F, AD-E300 451
Contract DNA001-76-C-0107

Descriptors: *Jet engine inlets, *Blast waves, *Turbofan engines, Distortion, Shock tubes, Nuclear explosion simulation, Subsonic flight, Yaw, Jet bombers, Wind tunnel models, Transonic wind tunnels, Overpressure, Boundary layer, Internal pressure, Ramps, Afterburners, Blowouts, Pressure measurement, Shock tests, Nuclear explosion damage, Shock waves, Mathematical prediction, Computer programs.
Identifiers: B-1 aircraft, Blast effects(Aerospace), BID computer program.

This report describes a program for simulating blast wave intercepts with a scaled aircraft engine in subsonic flight, using the shock tube technique for firing the blast-type waves. Three large 22.6 inch-diameter shock tubes were installed in the AEDC 16T (16 ft sq) transonic wind tunnel and were used to project blast waves at a 0.1-scale B-1 aircraft model. Forty-five firings were made, covering tunnel speeds of Mach 0, 0.55, 0.70, 0.85 and 0.90, blast overpressures (scaled to 1 atm. ambient pressure) from 2 to 6 psi, 0 deg and 5 deg yaw, and inlet flow rates representative of cruise and maximum power conditions. The model inlets were instrumented with 40 combination steady-state and dynamic total-pressure probes at each engine face section and other dynamic transducers to measure incident blast wave properties and inlet internal ramp and cowl pressures. Calculations of blast pressures in the inlets made with the KA BID code satisfactorily reproduced the principal features of the observed inlet duct and engine fact pressures. Four potentially adverse effects to engine operation from blast interaction were identified: blast-induced distortion, fan choking, afterburner blow-out and shock-boundary layer induced distortion.

N79-18976/7GA PC **A04/MF A01**
Shaker Research Corp., Ballston Lake, NY.
Turbojet Blade Vibration Data Acquisition Design and Feasibility Testing.
Final Report.
J. L. Frarey, N. J. Petersen, and D. A. Hess. Nov 78, 72p NASA-CR-159505, SRC-78-TR-36
Contract NAS3-21015

Descriptors: *Data acquisition, Systems engineering, *Turbine blades, *Turbojet engines, *Vibration measurement, Breadboard models, Computer programs, Flutter, Gas turbine engines, Microprocessors, Optical memory (Data storage), Structural vibration.
Identifiers: Feasibility.

For abstract, see STAR 1710

N79-18977/5GA PC **A03**/MF **A01**
Naval Air Propulsion Test Center, Trenton, NJ.
Rotor Fragment Protection Program: Statistics on Aircraft Gas Turbine Engine Rotor Failures That Occurred in US Commercial Aviation During 1976.
Final Report, 1975 - 1976.
R. A. Delucia, and J. T. Salvino. Jul 78, 30p
NASA-CR-159474, NAPC-PE-9
NASA ORDER C-41581-B

Descriptors: *Aircraft safety, *Commercial aircraft, *Gas turbine engines, *Rotors, Air transportation, Aircraft hazards, Aircraft parts, *Failure analysis, Flight operations, Statistical analysis, Tables(Data), Takeoff.

For abstract, see STAR 1710

N79-18978/3GA PC **A02**/MF **A01**
General Electric Co., Philadelphia, PA.
Containment of Composite Fan Blades.
Quarterly Progress Report, 1 Apr. - 30 Jun. 1977.
A. P. Coppa, and C. L. Stotler. 1977, 15p NASA-CR-158168, QPR-4
Contract NAS3-20118

Descriptors: *Blade tips, *Composite materials, *Containment, *Impact resistance, *Impact tests, *Turbine blades, Deformation, Engine parts, Failure modes, Frame photography, Sabot projectiles, Stainless steels.

For abstract, see STAR 1710

N79-18979/1GA PC **A23**/MF **A01**
Von Karman Inst. for Fluid Dynamics, Rhode-Saint-Genese (Belgium).
Turbine Blade Cooling.
1976, 539p VKI-LECTURE-Ser-83
Conf-Lecture Held at Rhode Saint Genese, Belgium, 12-16 Jan. 1976 Partly in English and French.

Descriptors: *Cooling, *Turbine blades, *Turbomachine blades, Aerodynamic configurations, Corrosion, Deformation, Fatigue life, Heat transfer coefficients, Stress analysis, Structural design.
Identifiers: Belgium.

For abstract, see STAR 1710

N79-18989/0GA PC **A13**/MF **A01**
Von Karman Inst. for Fluid Dynamics, Rhode-Saint-Genese (Belgium).
Transonic Flows in Axial Turbomachniery, Volume 1.
1976, 284p VKI-LECTURE-Ser-84-V-1
Seri-2. Conf-Lecture Held at Rhode Saint Genese, Belguim, 2-6 Feb 1976.

Descriptors: *Axial flow turbines, *Transonic flow, *Turbomachinery, Cascade flow, Finite element method, Fluid dynamics, Relaxation method (Mathematics), Time dependence.
Identifiers: Belgium.

For abstract, see STAR 1710

N79-18994/0GA PC **A18**/MF **A01**
Von Karman Inst. for Fluid Dynamics, Rhode-Saint-Genese (Belgium).
Transonic Flows in Axial Turbomachinery, Volume 2.
1976, 416p VKI-LECTURE-Ser-84-V-2
Conf-Proc. Of Lectures Held 2-6 Feb. 1976.

Descriptors: *Axial flow turbines, *Transonic flow, *Turbomachinery, Boundary layers, Cascade flow, Design analysis, Numerical analysis, Rotor blades(Turbomachinery), Shock wave interaction, Subsonic flow, Supersonic flow.
Identifiers: Belgium.

For abstract, see STAR 1710

N79-19415/5GA PC **A02**/MF **A01**
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
Measurement of Transient Strain and Surface Temperature on Simulated Turbine Blades Using Noncontacting Techniques.
F. D. Calfo, and F. G. Pollack. Aug 78, 18p
NASA-TM-78982, C-9180

Descriptors: Displacement measurement, Extensometers, *Stress concentration, *Surface temperature, *Thermal fatigue, Transient loads, *Turbine blades, Infrared photography, Leading edges, Microdensitometers, Pyrometers, Simulation, Steady state, Thermal cycling tests.

For abstract, see STAR 1710

21G. Reciprocating Engines

PB-293 772/0GA PC **A04**/MF **A01**
Department of Energy, Bartlesville, OK. Bartlesville Energy Research Center.
Performance Characteristics of Automotive Engines in the United States. Third Series - Report No. 2. 1978 Pontiac, 301 CID (4.9 Liters), 2V.
Interim rept. May 78,
D. E. Koehler, and W. F. Marshall. Feb 79, 59p BERC/OP-78/21, DOT/TSC/NHTSA-79-2, DOT-HS-803 831
Contract DOT/TSC-RA-77-07
See also Rept. no. 1, PB-286 077, and Rept. no. 3, PB-293 773.

Descriptors: *Internal combustion engines, *Fuel consumption, *Exhaust emissions, Performance evaluation, Exhaust gases, Specifications, Engineering standards, Air pollution, Automobiles.
Identifiers: Pontiac automobiles, Pontiac 301 CID engines(1978), Motor vehicles(1978 models), Horsepower.

Experimental data were obtained in dynamometer tests of a 1978 Pontiac 301 CID engine to determine fuel consumption and emissions (hydrocarbon, carbon monoxide, oxides of nitrogen) at steady-state engine operating modes. The objective of the program is to obtain engine performance data for estimating emissions and fuel economy for varied engine service and duty. The intent of the work is to provide basic engine characteristic data required as input for engineering calculations involving ground transportation.

PB-293 773/8GA PC **A04**/MF **A01**
Department of Energy, Bartlesville, OK. Bartlesville Energy Research Center.
Performance Characteristics of Automotive Engines in the United States. Third Series - Report No. 3. 1978 AMC, 121 CID (2.0 Liters), 2V.
Interim rept. May 78,
Don E. Koehler. Feb 79, 59p BERC/OP-78/20, DOT/TSC/NHTSA-79-3, DOT-HS-803 832
Contract DOT/TSC-RA-77-07
See also Rept. no. 2, PB-293 772, and Rept. no. 4, PB-293 774.

Descriptors: *Internal combustion engines, *Fuel consumption, *Exhaust emissions, Performance evaluation, Exhaust gases, Specifications, Engineering standards, Air pollution, Automobiles.
Identifiers: AMC automobiles, AMC 120 CID engines(1978), Motor vehicles(1978 models), Horsepower.

Experimental data were obtained in dynamometer tests of a 1978 AMC 121 CID engine to determine fuel consumption and emissions (hydrocarbon, carbon monoxide, oxides of nitrogen) at steady-state engine operating modes. The objective of the program is to obtain engine performance data for estimating emissions and fuel economy for varied engine service and duty. The intent of the work is to provide basic engine characteristic data required as input for engineering calculations involving ground transportation.

PB-293 774/6GA PC **A04**/MF **A01**
Department of Energy, Bartlesville, OK. Bartlesville Energy Research Center.
Performance Characteristics of Automotive Engines in the United States. Third Series - Report No. 4. 1978 Pontiac, 151 CID (2.5 Liters), 2V.
Interim rept.,
D. E. Koehler, and W. F. Marshall. Feb 79, 62p BERC/OP-78/22, DOT/TSC/NHTSA-79-4, DOT-HS-803 833
Contract DOT/TSC-RA-77-07
See also Rept. no. 3, PB-293 773, and Rept. no. 5, PB-293 775.

Descriptors: *Internal combustion engines, *Fuel consumption, *Exhaust emissions, Performance evaluation, Exhaust gases, Specifications, Engineering standards, Air pollution, Automobiles.
Identifiers: Pontiac automobiles, Pontiac 151 CID engines(1978), Motor vehicles(1978 models), Horsepower.

Experimental data were obtained in dynamometer tests of a 1978 Pontiac 151 CID engine to determine fuel consumption and emissions (hydrocarbon, carbon monoxide, oxides of nitrogen) at steady-state engine operating modes. The objective of the program is to obtain engine performance data for estimating emissions and fuel economy for varied engine service and duty. The intent of the work is to provide basic engine characteristic data required as input for engineering calculations involving ground transportation.

PB-293 775/0GA PC **A04**/MF **A01**
Department of Energy, Bartlesville, OK. Bartlesville Energy Research Center.
Performance Characteristics of Automotive Engines in the United States. Third Series - Report No. 5. 1978 Chevrolet, 200 CID (3.3 Liters), 2V.
Interim rept. Jun 78,
D. E. Koehler, and W. F. Marshall. Feb 79, 61p DOT/TSC/NHTSA-79-5, DOT-HS-803 834
Contract DOT/TSC-RA-77-07
See also Rept. no. 4, PB-293 774, and Rept. no. 6, PB-293 776.

Descriptors: *Internal combustion engines, *Fuel consumption, *Exhaust emissions, Performance evaluation, Exhaust gases, Specifications, Engineering standards, Air pollution, Automobiles.
Identifiers: Chevrolet automobiles, Chevrolet 200 CID engines(1978), Motor vehicles(1978 models), Horsepower.

Experimental data were obtained in dynamometer tests of a 1978 Chevrolet 200 CID engine to determine fuel consumption and emissions (hydrocarbon, carbon monoxide, oxides of nitrogen) at steady-state engine operating modes. The objective of the program is to obtain engine performance data for estimating emissions and fuel economy for varied engine service and duty. The intent of the work is to provide basic engine characteristic data required as input for engineering calculations involving ground transportation.

PB-293 776/1GA PC **A03**/MF **A01**
Department of Energy, Bartlesville, OK. Bartlesville Energy Research Center.
Performance Characteristics of Automotive Engines in the United States. Third Series - Report No. 6. 1978 Volkswagen Diesel, 90 CID (1.5 Liter), F.I.
Interim rept. Jul 78,
D. E. Koehler, and W. F. Marshall. Feb 79, 42p BERC/OP-78/33, DOT/TSC/NHTSA-79-6, DOT-HS-803 835
Contract DOT/TSC-RA-77-07
See also Rept. no. 5, PB-293 775, and Rept. no. 7, PB-293 777.

Descriptors: *Internal combustion engines, *Fuel consumption, *Exhaust emissions, Performance evaluation, Exhaust gases, Specifications, Engineering standards, Air pollution, Automobiles, Diesel engines.
Identifiers: Volkswagen automobiles, Volkswagen 90 CID engines(1978), Motor vehicles(1978 models), Horsepower.

Experimental data were obtained in dynamometer tests of a 1978 VW 90 CID engine to determine fuel consumption and emissions (hydrocarbon, carbon monoxide, oxides of nitrogen) at steady-state engine operating modes. The objective of the

program is to obtain engine performance data for estimating emissions and fuel economy for varied engine service and duty. The intent of the work is to provide basic engine characteristic data required as input for engineering calculations involving ground transportation.

PB-293 777/9GA PC **A04/MF A01**
Department of Energy, Bartlesville, OK. Bartlesville Energy Research Center.
Performance Characteristics of Automotive Engines in the United States. Third Series - Report No. 7. 1978, Ford, 98 CID (1.6 Liters), 2V.
Interim rept. Jul 78,
D. E. Koehler, and W. F. Marshall. Feb 79, 63p BERC/OP-78/34, DOT/TSC/NHTSA-79-7, DOT-HS-803 836
Contract DOT/TSC-RA-77-07
See also Rept. no. 6, PB-293 776, and Rept. no. 8, PB-293 778.

Descriptors: *Internal combustion engines, *Fuel consumption, *Exhaust emissions, Performance evaluation, Exhaust gases, Specifications, Engineering standards, Air pollution, Automobiles.
Identifiers: Ford automobiles, Ford 98 CID engines(1978), Motor vehicles(1978 models), Horsepower.

Experimental data were obtained in dynamometer tests of a 1978 Ford 98 CID engine to determine fuel consumption and emissions (hydrocarbon, carbon monoxide, oxides of nitrogen) at steady-state engine operating modes. The objective of the program is to obtain engine performance data for estimating emissions and fuel economy for varied engine service and duty. The intent of the work is to provide basic engine characteristic data required as input for engineering calculations involving ground transportation.

PB-293 778/7GA PC **A04/MF A01**
Department of Energy, Bartlesville, OK. Bartlesville Energy Research Center.
Performance Characteristics of Automotive Engines in the United States. Third Series - Report No. 8. 1978 Buick, 231 CID (3.8 Liter), 4V, Turbocharged.
Interim rept. Sep 78,
D. E. Koehler, and W. F. Marshall. Feb 79, 60p BERC/OP-78/43, DOT/TSC/NHTSA-79-8, DOT-HS-803 837
Contract DOT/TSC-RA-77-07
See also Rept. no. 7, PB-293 777, and Rept. no. 9, PB-293 779.

Descriptors: *Internal combustion engines, *Fuel consumption, *Exhaust emissions, Performance evaluation, Exhaust gases, Specifications, Engineering standards, Air pollution, Superchargers, Automobiles.
Identifiers: Buick automobiles, Buick 231 CID engines(1978), Motor vehicles(1978 models), Horsepower.

Experimental data were obtained in dynamometer tests of a 1978 Buick 231 CID turbocharged to determine fuel consumption and emissions (hydrocarbon, carbon monoxide, oxides of nitrogen) at steady-state engine operating modes. The objective of the program is to obtain engine performance data for estimating emissions and fuel economy for varied engine service and duty. The intent of the work is to provide basic engine characteristic data required as input for engineering calculations involving ground transportation.

PB-293 779/5GA PC **A04/MF A01**
Department of Energy, Bartlesville, OK. Bartlesville Energy Research Center.
Performance Characteristics of Automotive Engines in the United States. Third Series - Report No. 9. 1978 Ford, 300 CID (4.9 Liters), IV.
Interim rept. Sep 78,
D. E. Koehler, and W. F. Marshall. Feb 79, 59p BERC/OP-78/44, DOT/TSC/NHTSA-79-9, DOT-HS-803 838
Contract DOT/TSC-RA-77/07
See also Rept. no. 8, PB-293 778, and Rept. no. 10, PB-293 780.

Descriptors: *Internal combustion engines, *Fuel consumption, *Exhaust emissions, Performance evaluation, Exhaust gases, Specifications, Engineering standards, Air pollution, Trucks.
Identifiers: Ford vehicles, Ford 300 CID engines(1978), Motor vehicles(1978 models), Horsepower.

Experimental data were obtained in dynamometer tests of a 1978 Ford 300 CID truck engine to determine fuel consumption and emissions (hydrocarbon, carbon monoxide, oxides of nitrogen) at steady-state engine operating modes. The objective of the program is to obtain engine performance data for estimating emissions and fuel economy for varied engine service and duty. The intent of the work is to provide basic engine characteristic data required as input for engineering calculations involving ground transportation.

PB-293 780/3GA PC **A03/MF A01**
Department of Energy, Bartlesville, OK. Bartlesville Energy Research Center.
Performance Characteristics of Automotive Engines in the United States. Third Series - Report No. 10. 1978 Honda, 98 CID (1.6 Liters).
Interim rept. Dec 78,
D. E. Koehler, and W. F. Marshall. Feb 79, 42p BERC/OP-78/55, DOT/TSC/NHTSA-79-10, DOT-HS-803 839
Contract DOT/TSC-RA-77-07
See also Rept. no. 9, PB-293 779.

Descriptors: *Internal combustion engines, *Fuel consumption, *Exhaust emissions, Performance evaluation, Rotary combustion engines, Exhaust gases, Specifications, Engineering standards, Air pollution, Automobiles.
Identifiers: Honda automobiles, Honda 98 CID engines(1978), Motor vehicles(1978), Horsepower.

Experimental data were obtained in dynamometer tests of a 1978 Honda 98 CID engine to determine fuel consumption and emissions (hydrocarbon, carbon monoxide, oxides of nitrogen) at steady-state engine operating modes. The objective of the program is to obtain engine performance data for estimating emissions and fuel economy for varied engine service and duty. The intent of the work is to provide basic engine characteristic data required as input for engineering calculations involving ground transportation.

21H. Rocket Motors and Engines

N79-19073/2GA PC **A04/MF A01**
Lockheed Missiles and Space Co., Inc., Huntsville, AL. Huntsville Research and Engineering Center.
Structural Analysis of Cylindrical Thrust Chambers, Volume 1.
Final Report, May 1978 - Mar. 1979.
W. H. Armstrong. Mar 79, 52p NASA-CR-159522, LMSC-HREC-TR-D568827-V-1
Contract NAS3-21361

Descriptors: *Cylindrical chambers, *Dynamic structural analysis, Finite element method, *Structural failure, *Thrust chambers, Computer programs, Copper, Failure analysis, Plastic deformation, Plug nozzles, Walls.

For abstract, see STAR 1710

N79-19074/0GA PC **A11/MF A01**
Aerojet Liquid Rocket Co., Sacramento, CA.
Advanced Engine Study for Mixed-Mode Orbit-Transfer Vehicles.
Final Report.
J. A. Mellish. Dec 78, 228p NASA-CR-159491
Contract NAS3-21049

Descriptors: *Engine design, *Hybrid propulsion, *Orbit transfer vehicles, *Spacecraft propulsion, Engine coolants, Mission planning, Rp-1 rocket propellants, Thrust.

For abstract, see STAR 1710

N79-19075/7GA PC **A03/MF A01**
Lockheed Missiles and Space Co., Inc., Huntsville, AL. Huntsville Research and Engineering Center.
Solid Rocket Booster Thermal Protection System Materials Development.
Final Report.
W. G. Dean. Dec 78, 31p NASA-CR-161171, LMSC-HREC-TR-D568533
Contract NAS8-31555

Descriptors: *Booster rocket engines, *Solid propellant rocket engines, *Space shuttle boosters, *Thermal protection, Data reduction, Drawings, Reports, Tables(Data).

For abstract, see STAR 1710

PATENT-4 133 173 Not available NTIS
Department of the Navy Washington DC
Ducted Rockets.
Patent,
Klaus C. Schadow. Filed 13 Jun 77, patented 9 Jan 79, 5p AD-D005 808/1, PAT-APPL-805 944
Supersedes PAT-APPL-805 944-77.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $0.50.

Descriptors: *Patents, *Ducted rockets, Rocket exhaust, Boron, Combustion chambers, Efficiency, Rocket nozzles.
Identifiers: PAT-CL-60-204, Reaction engines.

The overall efficiency of a reaction engine, having primary and secondary combustion chambers, is greatly improved by reducing the primary exhaust velocity to subsonic speed. This is accomplished in a preferred embodiment by using an exhaust tube downstream of the primary nozzle. A tube diameter of about six times that of the primary throat diameter and a tube length of above five to ten times that of the tube diameter is considered optimum. (Author)

21I. Rocket Propellants

AD-A065 015/0GA PC **A04/MF A01**
Pennsylvania State Univ., University Park.
Convective Burning in Isolated Solid Propellant Cracks.
Research progress rept. 1 Feb 77-31 Jan 78,
K. K. Kuo, R. L. Kovalcin, and S. J. Ackman. Feb 79, 66p NWC-TP-6049
Contract N60530-77-C-0078

Descriptors: *Solid rocket propellants, *Flame propagation, Burning rate, Convection(Heat transfer), Crack propagation, Propellant grains, Mathematical analysis, Deflagration, Detonations, Ignition, Combustion chambers, Temperature, Gas dynamics, Boundary layer flow, Test methods.

The theoretical model for describing flame spreading and combustion phenomena inside an isolated solid propellant crack has been modified: (1) to solve for the subsurface temperature profile in facilitating the study of dynamic burning effect on crack cavity pressurization, (2) to incorporate the 'Dipstick' ignition criterion postulated by C. F. Price of the Naval Weapons Center, and (3) to improve the numerical treatment of the gas-dyanmic boundary conditions at the opening of the propellant crack. In addition, the governing equations are nondimensionalized and a number of dimensionless parameters have been obtained.

22. SPACE TECHNOLOGY

22A. Astronautics

AD-A065 295/8GA PC **A03/MF A01**
Michigan Univ., Ann Arbor. Space Physics Research Lab.
Investigation of the Interaction between the S3-2 Satellite and Its Environmental Space-plasma.
Final rept. 1 May-30 Sep 78,
Uri Samir, and Charles Lake. 31 Oct 78, 43p AFGL-TR-78-0291
Contract F19628-78-C-0046

Descriptors: *Scientific satellites, *Space charge, *Plasmas(Physics), *Space environments, Altitude, Plasma diagnostics, Langmuir probes, Ion beams, Electric current, Forecasting, Space shuttles.
Identifiers: S3-2 satellite.

Ion and electron measurements from the planar ion probes and the spherical electron probe on-

board the S3-2 satellite were used in order to investigate the distribution of ion current around the satellite in the closest proximity to the surface. The preliminary results obtained demonstrate in a quantitative manner the dependence of alpha = f(altitude) and alpha = f(R sub D) for: 24<R sub D<56 and 10<abs. vol. Phi sub N<18. We find that alpha at an altitude of about 300 km is about 2.5 to 3 orders of magnitude smaller than alpha at an altitude of about 500-600 km and alpha at this latter altitude range is by about one order of magnitude smaller than alpha at about 1100 km. We also find alpha for R sub D approx. = 54-56 to be 3.5 order of magnitude small er than alpha for R sub D approx. = 24-30. The investigation already performed yielded new results.

N79-19012/0GA PC **A14**/MF **A01**
Martin Marietta Corp., Denver, CO.
Application of Advanced Technology to Space Automation.
Final Report.
R. T. Schappell, J. T. Polhemus, J. W. Lowrie, C. A. Hughes, and J. R. Stephens. Jan 79, 325p NASA-CR-158350, MCR-79-519
Contract NASW-3106

Descriptors: *Automatic control, *Cybernetics, *Space programs, Technology assessment, Data acquisition, Data processing, Space missions, Spacecraft control, Spacecraft electronic equipment, Spacecraft guidance, Technological forecasting.
Identifiers: Automation.

For abstract, see STAR 1710

N79-19013/8GA PC **A20**/MF **A01**
National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
Conference on Space Simulation, (9th).
1977, 470p NASA-CP-2007
Conf-Conf. Held at Los Angeles, 26-28 Apr. 1977; Sponsored in Part by Inst. Of Environ. Sci., Aiaa, and AM. Soc. For Testing and Mater.

Descriptors: Conferences, *Space environment simulation, *Space simulators, Contamination, Environment simulation, Environmental control, Space shuttles, Systems analysis, Test facilities.
Identifiers: *Meetings.

For abstract, see STAR 1710

N79-19065/8GA PC **A04**/MF **A01**
Martin Marietta Corp., Denver, CO.
Integrated Orbital Servicing Study Follow-on. Volume 1: Executive Summary.
Final Report.
W. L. Derocher, Jr. Jun 78, 55p NASA-CR-150890, MCR-77-246-V-1
Contract NAS8-30820
Seri-3.

Descriptors: *Orbital assembly, *Service modules, *Space maintenance, *Space transportation system, Command and control, Computer techniques, Control theory, Economic factors, Feasibility analysis, Manipulators, Servocontrol, Servomechanisms, Teleoperators.

For abstract, see STAR 1710

N79-19066/6GA PC **A18**/MF **A01**
Martin Marietta Corp., Denver, CO.
Integrated Orbital Servicing Study Follow-on. Volume 2: Technical Analysis and System Design.
Final Report.
Apr 78, 404p NASA-CR-150891, MCR-77-246-V-2
Contract NAS8-30820
Seri-3.

Descriptors: *Manipulators, *Mission planning, *Service modules, *Space maintenance, Systems, Automatic control, Costs, Ground support equipment, Signal processing, Space transportation system, Spacecraft docking, Teleoperators.

For abstract, see STAR 1710

N79-19067/4GA PC **A05**/MF **A01**
Martin Marietta Corp., Denver, CO.
Integrated Orbital Servicing Study Follow-on. Volume 3: Engineering Test Unit and Controls.
Final Report.
Jun 78, 98p NASA-CR-150892, MCR-77-246-V-3
Contract NAS8-30820
Seri-3.

Descriptors: *Orbital assembly, *Service modules, *Space maintenance, *Space transportation system, Command and control, Computer techniques, Control theory, Manipulators, Servocontrol, Servomechanisms, Teleoperators.

For abstract, see STAR 1710

N79-19687/9GA PC **A03**/MF **A01**
Rockwell International Corp., Downey, CA. Space Div.
Simulated EVA Operation of a Remote Connector Assembly Test Report.
Final Report.
A. Lefever. Feb 79, 27p NASA-CR-161167, SSD-79-0056
Contract NAS8-33146

Descriptors: *Assembling, *Electric connectors, *Extravehicular activity, Human factors engineering, Human performance, Task complexity, Experimental design, Man machine systems, Space environment simulation.

For abstract, see STAR 1710

N79-19972/5GA PC **A05**/MF **A01**
Cornell Univ., Ithaca, NY. Center for Radiophysics and Space Research.
Galactic Civilizations: Population Dynamics and Interstellar Diffusion.
W. I. Newman, and C. Sagan. Dec 78, 90p NASA-CR-158245, CRSR-711
Contract NGR-33-010-101

Descriptors: *Exobiology, *Extraterrestrial life, *Population theory, Analysis(Mathematics), Colonies, Diffusion, Mathematical models, Potential theory, Wave fronts.
Identifiers: Nonlinear differential equations, Partial differential equations, Interstellar travel.

For abstract, see STAR 1710

22B. Spacecraft

AD-A065 097/8GA PC **A06**/MF **A01**
General Electric Co., Philadelphia, PA. Space Div.
Standard Test Rack Concept Definition Study.
Final rept. 19 Jul-1 Nov 78,
Murray Gross. Jan 79, 110p SAMSO-TR-78-145
Contract F04701-77-C-0116

Descriptors: *Test stands, *Space shuttles, Missions, Manned spacecraft, Payload, Control, Automation, Ground support, Requirements.

DoD Standard Test Rack Manned Interface Definition for Shuttle Sortie Flight Operations for typical DoD experiments and tests in orbit. Includes ground-based, orbital and automated control approaches. (Author)

N77-82345/8GA PC **A09**/MF **A01**
National Aeronautics and Space Administration, Washington, DC.
Space Transportation System, User Handbook.
Jun 77, 198p NASA-TM-74818

Descriptors: *Manned spacecraft, *Systems management, *Handbooks, Project planning, Payloads, Costs, Spacecraft launching bases, Landing pads, Ground support equipment, Florida, California.
Identifiers: *Space shuttles, *Space transportation, Spacelab, Kennedy Space Center, Vandenberg Air Force Base.

Contents: Management and procedures--(The user interface, standard systems, standard use, flight assignment, user charges, terms and conditions); Flight systems--(Shuttle system, Safety and interface verification, Spacelab, Upper stages, Long duration exposure facility, Multimission modular spacecraft); Launch and landing site operations--(An overview, KSC operations, KSC facilities and services, KSC management, Safety considerations, VAFB operations); Flight operations--(Flight planning, Communications network, Mission control center, Payload operations control center, Training and simulations).

N79-19069/0GA PC **A09**/MF **A01**
Martin Marietta Corp., Denver, CO.
Study of Alternative Probe Technologies.
Final Report.
Dec 77, 196p NASA-CR-152242, MCR-77-311
Contract NAS2-9635

Descriptors: *Space probes, *Spacecraft instruments, Atmospheric composition, Planetary atmospheres, Jupiter(Planet), Measuring instruments, Saturn(Planet), Uranus(Planet).
Identifiers: Jupiter atmosphere, Saturn atmosphere, Uranus atmosphere.

For abstract, see STAR 1710

N79-19071/6GA PC **A21**/MF **A01**
Rockwell International Corp., Downey, CA. Satellite Systems Div.
Satellite Power System (SPS) Concept Definition Study (Exhibit C).
Final Review.
G. M. Haley. 21 Mar 79, 477p NASA-CR-161173, SSD-79-0076
Contract NAS8-32475

Descriptors: *Design analysis, *Satellite power transmission (To earth), *Systems analysis, *Systems engineering, Construction, Data bases, Electric equipment, Equipment specifications, Launch vehicles, Solar arrays, Transportation.
Identifiers: *Satellite solar power stations, Spacecraft.

For abstract, see STAR 1710

N79-19347/0GA PC **A09**/MF **A01**
Systems Research Lab., Champaign, IL.
Digital Controller Design: Analysis of the Annular Suspension Pointing System.
Final Report.
B. C. Kuo. 1 Mar 79, 187p NASA-CR-161172, REPT-1-7-ED-07418(1F)
Contract NAS8-32358

Descriptors: *Pointing control systems, *Space shuttles, *Spacecraft control, Systems engineering, Actuators, Computerized simulation, Controllers, Digital systems, Space shuttle payloads.

For abstract, see STAR 1710

22C. Spacecraft Trajectories and Reentry

AD-A064 943/4GA PC **A12**/MF **A01**
California Univ., Los Angeles. School of Engineering and Applied Science.
Convective Heat and Mass Transfer to Re-Entry Vehicles.
Final rept. 1 Oct 75-30 Sep 78,
A. F. Mills. 1 Dec 78, 255p UCLA-ENG-7982, AFOSR-TR-79-0030
Grant AFOSR-76-2931

Descriptors: *Convection(Heat Transfer), *Mass transfer, *Reentry vehicles, Diffusion, Surface chemistry, Ablation, Transpiration, Cooling, Laminar boundary layer, Turbulent boundary layer, Inviscid flow, Energy transfer, Mathematical analysis, Nose cones, Spacecraft.

The analysis of convective heat and mass transfer to re-entry vehicles is reviewed with particular emphasis on relevant basic mass transfer theory. The topics covered include: the inviscid flow field, diffusion phenomena, simple mass transfer analyses, surface chemistry, simple heat transfer analyses, the surface energy balance, laminar boundary layer analysis, and turbulent boundary layer analysis. (Author)

AD-A065 255/2GA PC **A03**/MF **A01**
Massachusetts Inst. of Tech., Lexington. Lincoln Lab.

Operations Manual. Initial Orbit Estimation Module.
William J. Taylor. 11 Dec 78, 39p ETS-41, ESD-TR-78-370
Contract F19628-78-C-0002

Descriptors: *Orbits, Computer programs, Artificial satellites, Estimates, Position finding, Determination, Man computer interface, Instruction manuals, Angles, Range(Distance), Algorithms.
Identifiers: User manuals, IOMOD computer program.

A computer program to compute estimated orbital element sets based on positional observations from a single observing site has been developed and tested. It provides a reasonable mix of operator interaction and automation, making it adaptable to the level of proficiency of the user. This manual includes a program overview, concept of operations, specific operating instruction, examples of program operation, and examples of program output. (Author)

N79-19068/2GA PC **A03**/MF **A01**
Analytical and Computational Mathematics, Inc., Houston, TX.
Perturbations of Non-Resonant Satellite Orbits Due to a Rotating Earth.
A. Mueller. Jun 78, 43p NASA-CR-160129, ACM-TR-112
Contract NAS9-15445

Descriptors: *Satellite perturbation, Earth motion, Orbital mechanics, Tesseral harmonics, Von Zeipel method, Eccentricity, Gravitational fields, Resonant frequencies, Satellite drag.
Identifiers: *Earth rotation, Earth orbits.

For abstract, see STAR 1710

N79-19070/8GA PC **A03**/MF **A01**
Analytical and Computational Mathematics, Inc., Houston, TX.
Long Period Perturbations of Earth Satellite Orbits.
K. C. Wang. Jan 79, 27p NASA-CR-160130, ATM-TR-116
Contract NAS9-15445

Descriptors: Orbit perturbation, Satellite orbits, Von Zeipel method, Zonal harmonics, Computer programs, Hamiltonian functions, Numerical integration, Orbital mechanics.
Identifiers: *Satellite perturbation, *Earth orbits, Algorithms, ASOP computer program.

For abstract, see STAR 1710

N79-19979/0GA PC **A04**/MF **A01**
Old Dominion Univ., Norfolk, VA. Dept. of Mechanical Engineering and Mechanics.
Significance of Shock and Body Slip Conditions on Jovian Entry Heating.
Progress Report, Aug. 1978 - Dec. 1978.
S. N. Tiwari, and K. Y. Szema. Jan 79, 53p
Grant NSG-1492

Descriptors: *Atmospheric heating, *Jupiter atmosphere, Shock loads, Slip flow, Axisymmetric flow, Finite difference theory, Iterative solution, Laminar flow, Steady flow, Viscous flow.
Identifiers: Space probes, Reentry vehicles.

For abstract, see STAR 1710

22D. Spacecraft Launch Vehicles and Ground Support

AD-A065 032/5GA PC **A02**/MF **A01**
Massachusetts Inst. of Tech., Lexington. Lincoln Lab.
The Ground-Based Electro-Optical Detection of Deep-Space Satellites.
Journal article,
Robert Weber. 1978, 12p MS-4624, ESD-TR-78-350
Contract F19628-78-C-0002
Availability: Pub. in SPIE, v143 p59-69 1978.

Descriptors: *Space surveillance systems, *Reconnaissance satellites, Deep space, Global positioning system, Electrooptics, Optical detection, Reprints.
Identifiers: GEODSS(Ground based electrooptical deep space surveillance system).

No abstract available.

N79-19045/0GA PC **A09**/MF **A01**
Jet Propulsion Lab., Pasadena, CA.
The Deep Space Network.
Progress Report, Nov. 1978 - Dec. 1978.
15 Feb 79, 189p JPL-DSN-PR-42-49
Contract NAS7-100

Descriptors: *Deep space network, *Spacecraft tracking, *Tracking networks, Computer programs, Computer systems design, Data acquisition, Research and development, Systems engineering.

For abstract, see STAR 1710

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COO-1764-337 20H

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PB-293 306/7GA 5J

ABSORBERS (MATERIALS)
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PB-293 305/9GA 8I

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AD-A064 868/3GA 6E

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AD-A065 006/9GA 17D

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N79-19114/4GA 7D

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ED-157 522 5I

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ED-157 538 5B

ACCELERATED TESTING
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AD-A065 325/3GA 14D

ACCIDENT INVESTIGATIONS
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PB-293 237/4GA 13J

Marine Accident Report - Liberian Tankship SS SANSINENA Explosion and Fire, Union Oil Terminal, Berth 46, Los Angeles Harbor, California, December 17, 1976.
PB-293 268/9GA 13J

Railroad Accident Report - Head-end Collision of Louisville and Nashville Railroad Local Freight Train and Yard Train at Florence, Alabama, September 18, 1978.
PB-293 326/5GA 13L

Marine Accident Report - Collision of Argentine Freighter M/V SANTA CRUZ II and U.S. Coast Guard Cutter CUYAHOGA in Chesapeake Bay at the Mouth of the Potomac River, Maryland, October 20, 1978.
PB-293 461/0GA 13J

ACCIDENT PREVENTION
An Evaluation of the Impact of the Columbus, Georgia Alcohol Safety Action Project's Public Information and Education Countermeasures, January 1972 through December 1974. Section I.
PB-293 195/4GA 13L

An Analysis of Ultimate Performance Measures to Determine Total Project Impact in Columbus, Georgia from January 1972-December 1974. Section II, Volume I.
PB-293 196/2GA 13L

An Analysis of ASAP (Alcohol Safety Action Project) Activity in Columbus, Georgia from January 1972-December 1974. Section II, Volume 3.
PB-293 197/0GA 13L

An Analysis of the Impact of ASAP (Alcohol Safety Action Project) on the Traffic Safety System in Columbus, Georgia from January 1972 - December 1974. Section II, Volume 4.
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An Analysis of Drinker Diagnosis and Referral Activity in Columbus, Georgia from January 1972 - December 1974. Section II, Volume 5.
PB-293 199/6GA 13L

An Analysis of Alcohol Rehabilitation Efforts in Columbus, Georgia from January 1972 - December 1974. Section II, Volume 6.
PB-293 200/2GA 13L

Columbus, Georgia Alcohol Safety Action Project. Appendix 'H' Tables. Section III.
PB-293 201/0GA 13L

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PB-293 202/8GA 13L

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PB-293 203/6GA 13L

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PB-293 273/9GA 13L

Kansas City ASAP (Alcohol Safety Action Project). Section I. Analytic Study 3: An Analysis of ASAP Patrol Activity.
PB-293 623/5GA 13L

ACCIDENTS
Railroad Accident Reports - Brief Format, Issue Number 1 - 1978.
PB-293 488/3GA 13L

ACCOUNTING
A Review of the Material Requisition Billing Process. An IDA Approach.
AD-A064 986/3GA 5A

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AD-A065 375/8GA 7D

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ACHIEVEMENT TESTS
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AD-A065 137/2GA 14B

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Lubrication Handbook for the Space Industry. Part A: Solid Lubricants. Part B: Liquid Lubricants.
N79-19346/2GA 11H

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Aerospace Medicine and Biology: A Continuing Bibliography with Indexes, Supplement 190, February 1979.
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Studies of the Effects of Transitional and Turbulent Boundary Layers on the Aerodynamic Performance of Hypersonic Re-Entry Vehicles in High Reynolds Number Flows.
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Proceedings: Advances in Particle Sampling and Measurement (Asheville, NC, May 1978).
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PB-293 363/8GA 7D

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NTISUB/E/285-015 5C

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AD-A065 184/4GA 19A

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AOD-TR-78-001
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5303-A
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5303-B
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PB-293 371/1GA 13J

5303-C
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(MA-RD-940-79037)
PB-293 372/9GA 13J

5303-D
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(MA-RD-940-79038)
PB-293 373/7GA 13J

5303-E
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(MA-RD-940-79039)
PB-293 374/5GA 13J

5303-ES
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DR-78-1
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TR-6
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Harvard Medical School, Boston, MA. Dept. of Surgery.
AD-A064 968/1GA 6E

DAERO-78-G-029
Politecnico di Milano (Italy). Ist di Macchine.
AD-A065 064/8GA 19A

DAHC04-68-C-0006
California Inst. of Tech., Pasadena. Dept. of Applied Mathematics.
AD-A065 245/3GA 7D

DAHC04-72-C-0024
Arizona Univ., Tucson. Dept. of Chemistry.
AD-A065 370/9GA 7C

DAHC04-74-G-0176
Lehigh Univ., Bethlehem, PA.
AD-A065 252/9GA 20D

DAHC04-74-G-0231
California Univ., Santa Barbara. Dept. of Chemistry.
AD-A064 917/8GA 7D

DAHC04-75-C-0093
University of Southern California, Los Angeles. Dept. of Chemistry.
AD-A065 375/8GA 7D

DAHC04-75-G-0002
University of Southern California, Los Angeles.
AD-A065 186/9GA 20L

DAHC04-75-G-0099
Illinois Univ. at Urbana-Champaign.
AD-A065 280/0GA 7D

DAHC04-75-G-0112
Illinois Inst. of Tech., Chicago. Microbial Biophysics Lab.
AD-A065 226/3GA 6R

DAHC04-75-G-0115
Battelle Columbus Labs., OH.
AD-A065 143/0GA 11F

DAHC04-75-G-0117
Duke Univ., Durham, NC. Paul M. Gross Chemical Lab.
AD-A065 379/0GA 6A

DAHC04-75-G-0142
Illinois Inst. of Tech., Chicago. Dept. of Mechanics Mechanical and Aerospace Engineering.
AD-A065 106/7GA 1C

DAHC04-75-G-0150
Florida Univ., Gainesville. Dept. of Industrial and Systems Engineering.
AD-A065 342/8GA 15E

DAHC04-75-G-0185
Stanford Univ., CA. Dept. of Computer Science.
AD-A065 285/9GA 12A

DAMD17-77-C-7001
Maryland Univ., College Park. Dept. of Psychology.
AD-A064 975/8GA 5J

DAMD17-78-G-9440
Institute for Medical Research, Kuala Lumpur (Malaysia).
AD-A065 069/7GA 6E

DASG60-77-C-0073
Stanford Univ., CA. Stanford Electronics Labs.
AD-A065 442/6GA 9B

DASG60-77-C-0115
Rockwell International, Anaheim, CA. Electronics Research Center.
AD-A065 303/0GA 9E

DASG60-78-C-0126
Massachusetts Inst. of Tech., Lexington. Lincoln Lab.
AD-A065 320/4GA 9E

DCA200-C-637
Western Union Telegraph Co., McLean, VA. System Engineering Dept.
AD-A064 936/8GA 17B

DCA200-C-641
SRI International, Menlo Park, CA. Network Information Center.
AD-A065 421/0GA 17B

DE-A101-79ET20485
Technical Marketing Associates, Inc., Concord, MA.
N79-19451/0GA 5C

DEN-3-40
Technical Marketing Associates, Inc., Concord, MA.
N79-19451/0GA 5C

DHEW-AOA-90-751
Indiana Univ. at Bloomington. School of Public and Environmental Affairs.
HRP-0018518/1GA 5I

DHEW/HCFA-240-76-0101
Health Care Management Systems, Inc., La Jolla, CA.
PB-293 523/7GA 6E
PB-293 524/5GA 6E
PB-293 525/2GA 6E

DHEW-HS-54-71156
National Association of Coordinators of State Programs for the Mentally Retarded, Inc., Arlington, VA.
HRP-0027677/4GA 6E

DHEW-OS-74-248
Washington Univ., Seattle. Dept. of Health Services.
PB-293 789/4GA 6E

DHEW-263-76-0467
American Coll. of Radiology, Chicago, IL.
HRP-0017136/3GA 6L

DHEW-000318
Southeastern Wisconsin Health Systems Agency, Inc., Milwaukee.
HRP-0026636/1GA 6E
HRP-0026641/1GA 6E

DHEW-400-75-0023
Educational Products Information Exchange Inst., New York.
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DI-14-16-0008-2118
Virginia Inst. of Marine Science, Gloucester Point.
PB-293 307/5GA 8A

DI-14-31-0001-3829
New Hampshire Univ., Durham. Water Resources Research Center.
PB-293 147/5GA 13B

DI-14-31-0001-5010
Georgia Inst. of Tech., Atlanta. Environmental Resources Center.
PB-293 290/3GA 13B

DI-14-31-001-5015
Iowa State Univ., Ames. Dept. of Agricultural Economics.
PB-293 145/9GA 13B

DI-14-31-0001-5213
Purdue Univ., Lafayette, IN. Water Resources Research Center.
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PB-293 647/4GA 13B

DI-14-34-0001-6021
Maryland Univ., College Park. Water Resources Research Center.
PB-293 209/3GA 6M

DI-14-34-0001-6045
Texas A and M Univ., College Station. Water Resources Inst.
PB-293 610/2GA 2B

DI-14-34-001-7011
Colorado State Univ., Fort Collins. Water Resources Research Inst.
PB-293 647/4GA 13B

DI-14-34-0001-7035
Kansas Water Resources Research Inst., Manhattan.
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DI-14-34-0001-7053
Missouri Univ.-Columbia. Dept. of Civil Engineering.
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DI-14-34-0001-7054
Missouri Univ.-Columbia. Dept. of Civil Engineering.
PB-293 183/0GA 13B

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DI-14-34-0001-7090
Tennessee Univ., Knoxville. Water Resources Research Center.
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Texas A and M Univ., College Station. Water Resources Inst.
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DI-14-34-0001-7520
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PB-294 080/7GA 7A

DI-14-34-0001-8014
Idaho Univ., Moscow. Dept. of Entomology.
PB-293 358/8GA 8H

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Massachusetts Univ., Amherst. Water Resources Research Center.
PB-293 606/0GA 13B

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Tennessee Univ., Knoxville. Water Resources Research Center.
PB-293 513/8GA 13B

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Mathematica Policy Research, Inc., Washington, DC.
PB-293 205/1GA 5C

DL-J-9-M-8-0113
CISA, Inc., Baltimore, MD.
PB-293 266/3GA 5I

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PB-293 257/2GA 5C

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DL-21-06-77-04
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DL-21-29-73-49
Washington Univ., St. Louis, MO. Dept. of Economics.
PB-293 262/2GA 5C

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PB-293 302/6GA 5A

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Cornell Univ., Ithaca, NY. Dept. of Sociology.
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Kaman AviDyne, Burlington, MA.
AD-A065 388/1GA 21E

DO-ADI-78-00-3037
Marine Equipment Leasing, Inc., Falls Church, VA.
PB-294 236/5GA 13J

DOE-EY-76-C-07-1570
Idaho National Engineering Lab., Idaho Falls.
PB-294 441/1GA 18H

DOT-FA77WA-3938
Drexel Univ., Philadelphia, PA. Dept. of Physics and Atmospheric Sciences.
AD-A065 481/4GA 4B

DOT-FA-77WA-3965
Institute for Defense Analyses, Arlington, VA.
AD-A065 472/3GA 4A

DOT-FA77WA-4069
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AD-A064 979/8GA 1C

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DOT-HS-7-01530
Michigan Univ., Ann Arbor. Highway Safety Research Inst.
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Georgia Univ., Athens. Inst. of Government.
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Virginia Commonwealth Univ., Richmond. School of Social Work.
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DOT-OST-PS-50367
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DOT/TSC-RA-77-07
Department of Energy, Bartlesville, OK. Bartlesville Energy Research Center.
PB-293 772/0GA 21G
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DOT-TSC-1349
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California Univ., Los Angeles.
N79-19414/8GA 1C

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Comstock and Wescott, Inc., Cambridge, MA.
N79-19454/4GA 10C

EC-77-A-31-1042
Army Mobility Equipment Research and Development Command, Fort Belvoir, VA.
AD-A065 147/1GA 13F

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Massachusetts Univ., Amherst. Univ. Center for Economic Development.
PB-293 319/0GA 5C

EPA-R-802336
Alcorn State Univ., Lorman, MS. Dept. of Animal Science.
PB-293 156/6GA 2C

EPA-R-803249
Illinois Univ. at Urbana-Champaign. Inst for Environmental Studies.
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PB-293 315/8GA 13B

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EPA-68-01-2299
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PB-293 157/4GA 8H

EPA-68-01-3896
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PB-293 376/0GA 13B

EPA-68-01-3947
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PB-293 164/0GA 13B

EPA-68-02-2112
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EPA-68-02-2607
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EPA-68-02-2630
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National Bureau of Standards, Washington, DC. Inst. for Materials Research.
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Brookhaven National Lab., Upton, NY.
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EY-76-C-02-0535
Colorado Univ., Boulder. Nuclear Physics Lab.
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EY-76-C-02-1195
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Spectrolab, Inc., Sylmar, CA.
AD-A065 009/3GA 10B

F33615-77-C-3141
Wright State Univ., Dayton, OH. Brehm Lab.
AD-A064 970/7GA 7D

F33615-78-C-2203
General Electric Co., Cincinnati, OH. Aircraft Engine Group.
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F44620-69-C-0047
Polytechnic Inst. of New York, Brooklyn. Dept. of Electrical Engineering and Electrophysics.
AD-A065 199/2GA 20N

F44620-71-C-0087
California Univ., Berkeley.
AD-A065 240/4GA 9B
AD-A065 241/2GA 20E

F44620-72-C-0017
California Univ., San Diego, La Jolla. Inst. for Pure and Applied Physical Sciences.
AD-A065 203/2GA 7D

F44620-73-C-0074
Carnegie-Mellon Univ., Pittsburgh, PA. Dept. of Computer Science.
AD-A064 845/1GA 9B

F44620-75-C-0038
California Inst. of Tech., Pasadena. Graduate Aeronautical Labs.
AD-A065 301/4GA 20M

F44620-76-C-0027
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F44620-76-C-0037
Calspan Advanced Technology Center, Buffalo, NY.
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F44620-76-C-0100
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AD-A065 242/0GA 20E

F49620-76-C-0023
SRI International, Menlo Park, CA.
AD-A064 972/3GA 4B

F49620-77-C-0060
IBM Thomas J. Watson Research Center., Yorktown Heights, NY.
AD-A064 844/4GA 20B

F49620-77-C-0099
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F49620-77-C-0101
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F49620-78-C-0005
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AD-A065 492/1GA 7D

F49620-78-C-0011
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AD-A065 436/8GA 7D

F49620-78-C-0019
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PB-293 032/9GA 8I

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JPL-954356
Honeywell Corporate Material Sciences Center, Bloomington, MN.
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JPL-954603
Cornell Univ., Ithaca, NY. Center for Radiophysics and Space Research.
N79-19316/5GA 14B

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JPL-954901
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Kentucky Univ., Lexington. Inst. for Mining and Minerals Research.
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Lockheed Missiles and Space Co., Inc., Sunnyvale, CA.
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N01-HV-3-2913
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PB-293 570/8GA 11I

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PB-293 508/8GA 6O

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Florida State Univ., Tallahassee. Dept. of Oceanography.
PB-293 337/2GA 8C

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Cornell Univ., Ithaca, NY. Lab. of Atomic and Solid State Physics.
AD-A064 913/7GA 20E

N00014-75-C-0265
Carnegie-Mellon Univ., Pittsburgh, PA. Dept. of Metallurgy and Materials Science.
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N00014-75-C-0273
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AD-A064 921/0GA 20D
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AD-A065 443/4GA 20D

N00014-75-C-0420
California Univ., Berkeley.
AD-A065 241/2GA 20E

N00014-75-C-0492
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AD-A065 190/1GA 7D

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AD-A065 019/2GA 12A

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AD-A065 459/0GA 12B

N00014-75-C-0616
Texas Univ. at Austin. Center for Cybernetic Studies.
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AD-A065 459/0GA 12B

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AD-A065 212/3GA 20A

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AD-A065 191/9GA 7D

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Rensselaer Polytechnic Inst., Troy, NY. Dept. of Electrical and Systems Engineering.
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Rockwell International, Thousand Oaks, CA. Science Center.
AD-A064 856/8GA 11F

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Illinois Univ. at Urbana-Champaign. Dept. of Metallurgy and Mining Engineering.
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AD-A065 139/8GA 12A

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N00014-76-C-0060
Washington Univ., Seattle. Dept. of Mechanical Engineering.
AD-A065 093/7GA 20K

N00014-76-C-0182
Arizona Univ., Tucson. Dept. of Aerospace and Mechanical Engineering.
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AD-A065 042/4GA 11D

N00014-76-C-0330
Stanford Univ., CA. Dept. of Computer Science.
AD-A065 283/4GA 12A

N00014-76-C-0368
Rensselaer Polytechnic Inst., Troy, NY. Dept. of Mechanical Engineering Aeronautical Engineering and Mechanics.
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N00014-76-C-0418
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AD-A065 174/5GA 12B

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Massachusetts Inst. of Tech., Cambridge. Dept. of Earth and Planetary Sciences.
AD-A065 068/9GA 8G

N00014-76-C-0548
University of Southern California, Los Angeles. Dept. of Chemistry.
AD-A064 932/7GA 7D

N00014-76-C-0643
Yale Univ., New Haven, CT. Dept. of Engineering and Applied Science.
AD-A064 887/3GA 20L
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N00014-76-C-0648
Michigan Univ., Ann Arbor. Human Performance Center.
AD-A064 867/5GA 5J

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AD-A065 075/4GA 21E

N00014-76-C-0816
North Carolina Univ. at Chapel Hill. Dept. of Chemistry.
AD-A065 103/4GA 7D
AD-A065 419/4GA 7D

N00014-76-C-0889
Rhode Island Univ., Kingston. Dept. of Ocean Engineering.
AD-A065 070/5GA 7D

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Battelle Pacific Northwest Labs., Richland, WA. Biology Dept.
AD-A065 326/1GA 6R

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AD-A065 289/1GA 5J

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AD-A065 499/6GA 17G

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AD-A065 106/3GA 7D

N00014-77-C-0481
California Inst. of Tech., Pasadena. Div. of Chemistry and Chemical Engineering.
AD-A065 023/4GA 20F

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California Univ., Berkeley. Electronics Research Lab.
AD-A065 157/0GA 20I

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AD-A065 121/6GA 5J
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Wisconsin Univ.-Milwaukee. Dept. of Chemistry.
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N00014-78-C-0042
RAND Corp., Santa Monica, CA.
AD-A065 040/8GA 5J

N00014-78-C-0100
Decisions and Designs, Inc., McLean, VA.
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N00014-78-C-0117
Colorado State Univ., Fort Collins. Dept. of Electrical Engineering.
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N00014-78-C-0222
Texas Univ. at Austin Center for Cybernetic Studies.
AD-A065 096/0GA 12B

N00014-78-C-0509
Arizona Univ., Tucson. Dept. of Psychology.
AD-A065 154/7GA 5J

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Analysis and Technology, Inc., North Stonington, CT.
AD-A065 118/2GA 6G

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Pennsylvania State Univ., University Park. Applied Research Lab.
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N62269-75-C-0305
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San Diego Aircraft Engineering, Inc., CA.
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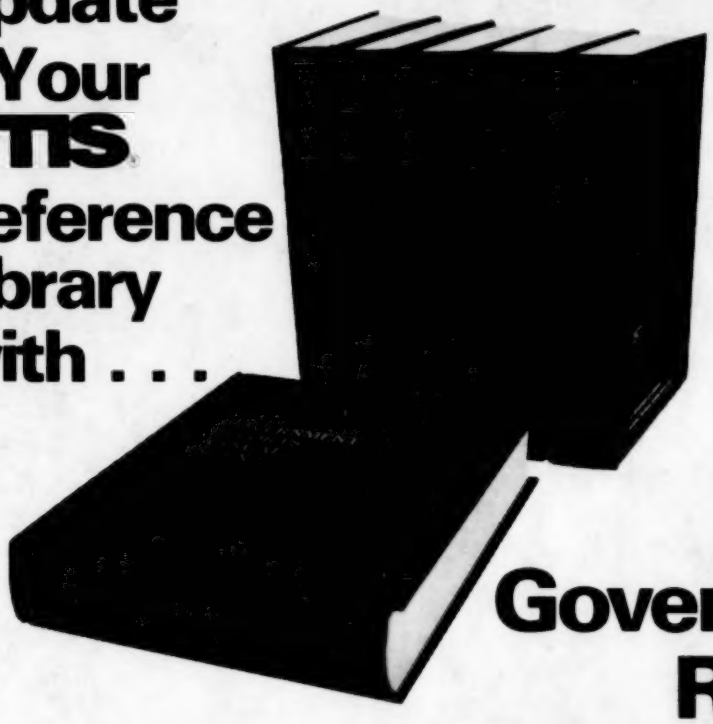

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